Drinking Water Surveillance Program

ST. THOMAS (ELGIN) WATER SUPPLY SYSTEM

Annual Report 1989

Ontario
Environment
Environnement

ISSN 0840-5255

ST. THOMAS (ELGIN)
WATER SUPPLY SYSTEM

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1989

Cette publication technique n'est disponible qu'en anglais.

January 1991

PIBS 1377

EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

ST. THOMAS (ELGIN) WATER SUPPLY SYSTEM
1989 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The St. Thomas (Elgin) Water Treatment Plant is a conventional treatment plant which treats water from Lake Erie. The process consists of coagulation, flocculation, sedimentation, filtration, disinfection and fluoridation. This plant has a design capacity of 45.0 x 1000 m^3/day and serves a population of approximately 54,500.

Water samples from the raw, treated and two distribution sites were taken on a monthly basis. The St. Thomas (Elgin) Water Treatment Plant was sampled for the presence of approximately 180 parameters monthly during 1989. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organic (Chloroaromatics, Chlorophenols, Pesticides and PCB, Phenolics, Polyaromatic Hydrocarbons, Specific Pesticides and Volatiles). Chlorophenols and Specific Pesticides were analyzed in June and November only.

A summary of results is shown in Table A.

Inorganic and Physical parameters were below any applicable health related ODWOs.

Samples were analyzed monthly for the presence of approximately 110 Organics. Levels did not exceed health related guidelines.

During 1989, the DWSP sampling results indicated that the St. Thomas (Elgin) Water Supply System produced good quality water at the plant and this quality was maintained in the distribution system.

TABLE A

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS)

SUMMARY TABLE BY SCAN

SCAN	RAW TESTS	RAW POSITIVE	RAW %POSITIVE	TREATED TESTS	TREATED POSITIVE	TREATED %POSITIVE	SITE 1 TESTS	SITE 1 POSITIVE	SITE 1 %POSITIVE	SITE 2 TESTS	SITE 2 POSITIVE	SITE 2 %POSITIVE
BACTERIOLOGICAL	36	24	66	36	5	13	36	5	13	33	3	9
CHEMISTRY (FLD)	36	36	100	72	72	100	143	143	100	132	132	100
CHEMISTRY (LAB)	252	210	83	252	182	72	444	357	80	407	326	80
METALS	288	179	62	265	122	46	564	300	53	517	273	52
CHLOROAROMATICS	154	0	0	168	0	0	168	0	0	154	0	0
CHLOROPHENOLS	12	0	0	12	0	0	.	.	.	.	.	.
PAH	188	0	0	188	0	0	.	.	.	.	.	.
PESTICIDES & PCB	387	0	0	408	0	0	343	0	0	309	0	0
PHENOLICS	12	10	83	12	8	66	.	.	.	.	.	.
SPECIFIC PESTICIDES	64	0	0	65	0	0	12	0	0	11	0	0
VOLATILES	348	0	0	348	48	13	290	40	13	290	40	13
TOTAL	1777	459		1826	437		2000	845		1853	774	

NO KNOWN HEALTH RELATED GUIDELINES WERE EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

ST. THOMAS (ELGIN) WATER SUPPLY SYSTEM

1989 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1989, 65 plants were being monitored.

The DWSP was initiated at the St. Thomas (Elgin) Water Supply System in March 1987. Annual reports were published for 1987 and 1988 (ISSN 0840-5255).

This report contains information and results for 1989.

In order to accommodate the increasing number of plants on the DWSP and to facilitate the timely completion of the 1989 annual reports, plants with two or more years of published data will receive an abbreviated annual report. This report maintains the same general format as in previous years but does not include a comprehensive discussion of results. For more detail on the parameters analyzed and discussion of results, consult the 1987 and 1988 reports.

PLANT DESCRIPTION

The St. Thomas (Elgin) Water Supply System uses a conventional treatment plant which treats water from Lake Erie. The process consists of coagulation, flocculation, sedimentation, filtration, disinfection and fluoridation. Powdered activated carbon is added for taste and odour control. This plant has a rated capacity of 45 x 1000 m^3/day and flows for the day of sampling ranging from 23.1 x 1000 m^3/day to 31.8 x 1000 m^3/day. It serves a population of approximately 54,500.

The plant location is shown in Figure 1. Plant process details, in a block schematic, are shown in Figure 2. General plant information is presented in Table 2.

SAMPLING AND ANALYSIS

Plant operating personnel perform analyses on the following parameters for process control (Table 1).

Water at the St. Thomas (Elgin) Water Treatment plant and at two locations in the distribution system was sampled for the presence of approximately 180 parameters monthly in 1989. The Specific Pesticides and Chlorophenols scans were sampled in June and November only. Polyaromatic Hydrocarbons and Phenolics are only analyzed in the raw and treated water at the plant. As of August

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM

SITE LOCATION MAP

ELGIN WATER SUPPLY SYSTEM

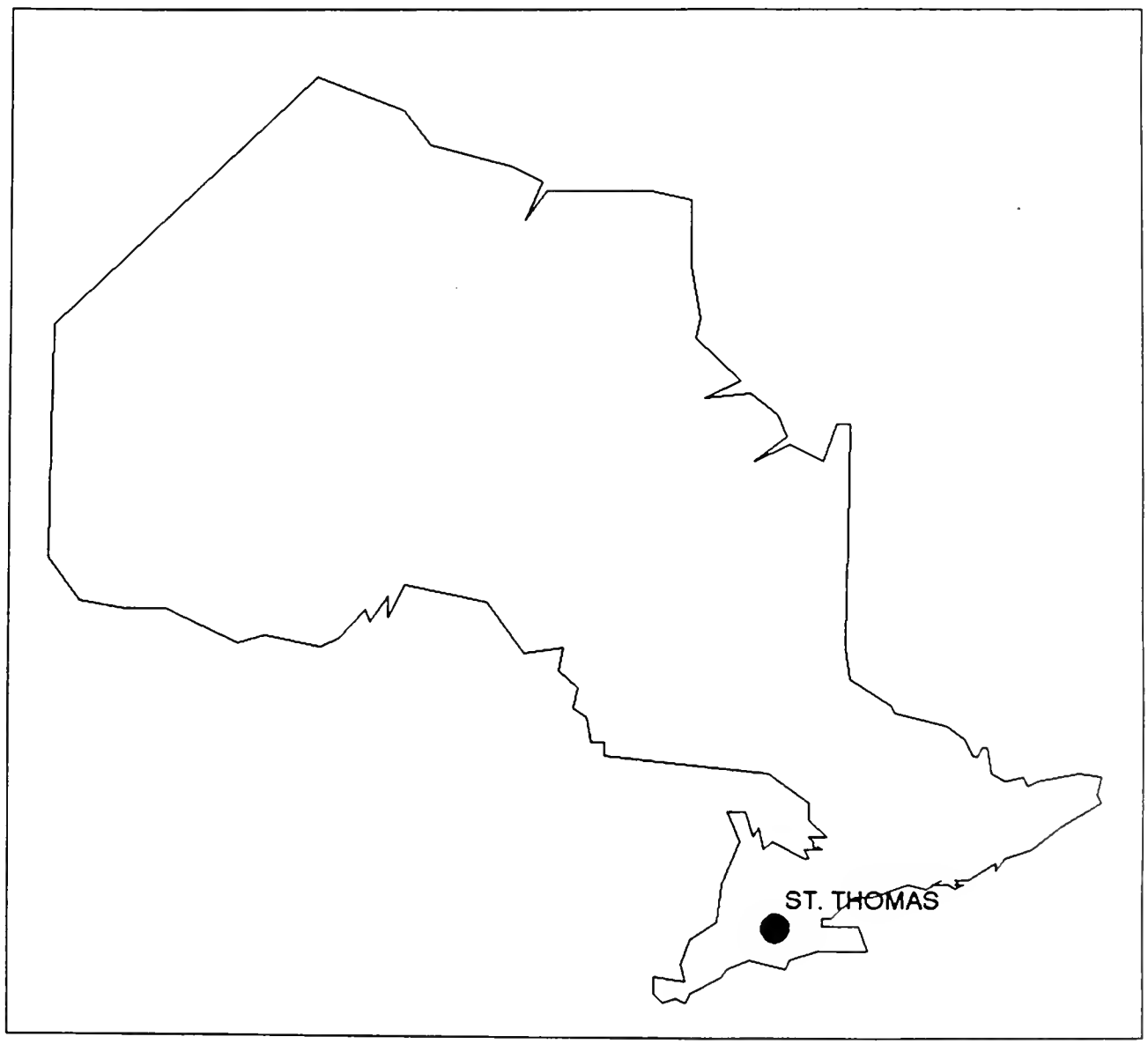

FIGURE 2

ELGIN/ST THOMAS WTP

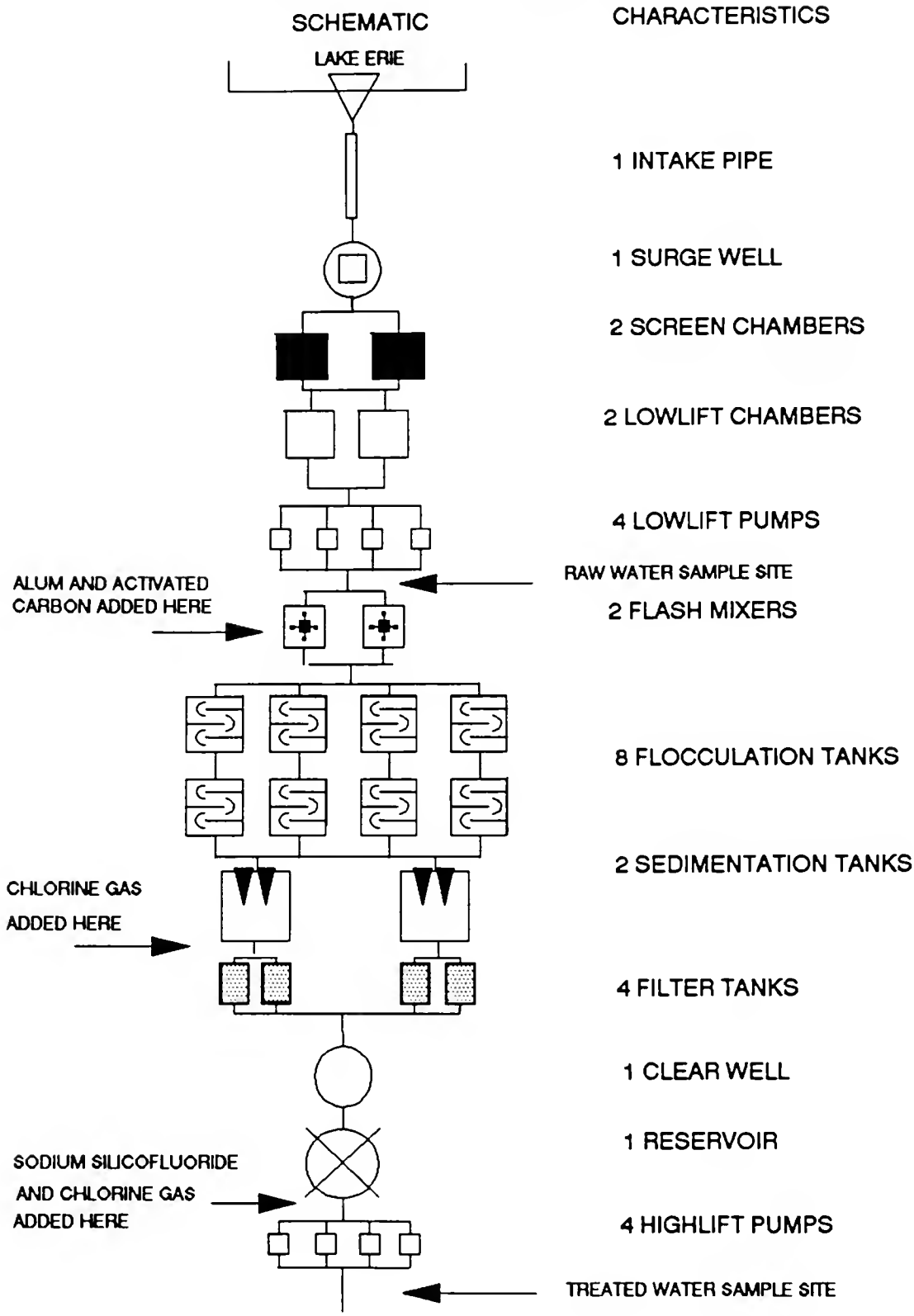

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

IN-PLANT MONITORING ST. THOMAS (ELGIN) WTP 1989

PARAMETER	LOCATION	FREQUENCY
Aluminum residual	Treated water	weekly
Chlorine residual-free	Treated water	daily
total	Treated water	every 4 hrs
Fluoride	Treated water	daily
pH	Treated water	daily
Temperature	Treated water	daily
Turbidity	Raw intake line	continuous
	Treated water	every 4 hrs

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

ELGIN/ST THOMAS WATER SUPPLY SYSTEM

LOCATION:	BOX 514 ST THOMAS, ONTARIO COUNTY ROAD 24 (519-782-3101)
SOURCE:	RAW WATER SOURCE - LAKE ERIE
RATED CAPACITY:	45 (1000 M3/DAY)
OPERATION:	MINISTRY OF THE ENVIRONMENT
PLANT SUPERINTENDENT:	R. POWER
MINISTRY REGION:	SOUTHWESTERN
DISTRICT OFFICER:	MR. P. BOLGER

MUNICIPALITY SERVED	POPULATION
ST THOMAS	31,350
YARMOUTH TWP	7,927
BAYHAM TWP	3,922
SOUTHWOLD TWP	4,342
MALAHIDE TWP	5,257
VIENNA VILLAGE	282
PT. BURWELL VILLAGE	681
PT. BRUCE VILLAGE	421

1989, the analysis of Triazine pesticides was dropped from the distribution sample. Laboratory analysis was conducted at the Ministry of the Environment facilities in Rexdale, Ontario.

RESULTS

Field Chemistry measurements were recorded on the day of sampling and were entered on the DWSP database as submitted by plant personnel.

Table 3 contains information on the sample day retention time, flow rate and treatment chemicals used and their associated dosages.

Table 4 is a summary break-down of the number of water samples analyzed by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analyzed on DWSP.

Associated guidelines and detection limits are also supplied on tables 5 and 6. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOs) as defined in the 1984 publication (ISBN 0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters. These are currently under review. When an ODWO is not available, guidelines/limits from other agencies are consulted. The Parameters Listing System (PALIS), recently published (ISBN 0-7729-4461-X) by the MOE, catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

Many of the compounds detected are naturally occurring or are treatment by-products.

IN THIS REPORT, DISCUSSION IS LIMITED TO THE TREATED AND DISTRIBUTED WATER AND ADDRESSES ONLY THOSE PARAMETERS WITH CONCENTRATIONS ABOVE GUIDELINE VALUES AND

ORGANICS WITH DETECTED POSITIVE RESULTS.

Results for the treated and distributed water indicate that no health related guidelines were exceeded.

Inorganic and Physical Parameters

Aluminum

The plant operational guideline of 100 µg/L as Al in water leaving the plant was exceeded in six treated water samples.

Organic Parameters

Trihalomethanes

Trihalomethanes (THMs) are acknowledged to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs are comprised of Chloroform, Chlorodibromomethane and Dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for total THMs. All Total THM occurrences, in the treated and distributed samples ranging from 25.9 to 80.0 µg/L, were well below the ODWO of 350 µg/L.

CONCLUSIONS

No health related water quality guidelines were exceeded.

Results listed in this report for 1989 are consistent with results reported for previous years.

The treated water was of good quality and this was maintained in the distribution system.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) SAMPLE DAY CONDITIONS FOR 1989

	SAMPLE DAY CONDITIONS		TREATMENT CHEMICAL DOSAGES (MG/L)					
			COAGULATION		TASTE & ODOUR	PRE-CHLORINATION	POST-CHLORINATION	FLUORIDATION
			ALUM LIQUID	POLYALUMINUM SULPHATE	ACTIVATED CARBON POWDER	CHLORINE	CHLORINE	SODIUM SILICOFLUORIDE
DATE	DELAY* TIME(HRS)	FLOW (1000M3)						
JAN 04	10.1	23.1	14.20	.	2.40	1.10	.25	1.20
FEB 07	10.1	23.1	14.00	.	2.40	1.10	.18	1.20
MAR 14	6.4	31.8	5.50	.	2.00	1.15	.20	1.20
APR 04	6.4	31.8	20.00	.	2.00	1.15	.22	1.20
MAY 01	10.1	23.1	.	6.50	2.00	1.15	.22	1.20
JUN 06	10.1	23.1	6.50	.	2.10	1.25	.35	1.20
JUL 05	6.4	31.8	11.50	.	2.90	1.50	.25	1.20
AUG 09	10.1	23.1	8.50	.	4.10	1.50	.45	1.00
SEP 06	6.4	31.8	16.50	.	9.20	1.30	.43	1.00
OCT 17	10.1	23.1	.	8.50	4.50	1.15	.35	1.00
NOV 07	10.1	23.1	23.50	.	4.50	1.25	.40	1.00
DEC 05	10.1	23.1	.	20.00	4.50	.23	1.09	.

* THE DELAY TIME BETWEEN THE RAW AND TREATED WATER SAMPLING, SHOULD ESTIMATE THE RETENTION TIME.

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	RAW			TREATED			SITE 1			SITE 2		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
BACTERIOLOGICAL	FECAL COLIFORM MF	12	5	0	.	.	.	.	.	.	.	.	.
	STANORD PLATE CNT MF	.	.	.	12	3	0	12	2	0	11	3	0
	TOTAL COLIFORM MF	12	7	0	12	0	0	12	0	0	11	0	0
	T COLIFORM BCKGRD MF	12	12	0	12	2	0	12	3	0	11	0	0
*TOTAL SCAN BACTERIOLOGICAL		36	24	0	36	5	0	36	5	0	33	3	0
*TOTAL GROUP BACTERIOLOGICAL		36	24	0	36	5	0	36	5	0	33	3	0
CHEMISTRY (FLD)	FLD CHLORINE (COMB)	.	.	.	12	12	0	24	24	0	22	22	0
	FLD CHLORINE FREE	.	.	.	12	12	0	24	24	0	22	22	0
	FLD CHLORINE (TOTAL)	.	.	.	12	12	0	24	24	0	22	22	0
	FLD PH	12	12	0	12	12	0	24	24	0	22	22	0
	FLD TEMPERATURE	12	12	0	12	12	0	23	23	0	22	22	0
	FLD TURBIDITY	12	12	0	12	12	0	24	24	0	22	22	0
*TOTAL SCAN CHEMISTRY (FLD)		36	36	0	72	72	0	143	143	0	132	132	0
CHEMISTRY (LAB)	ALKALINITY	12	12	0	12	12	0	24	24	0	22	22	0
	CALCIUM	12	12	0	12	12	0	24	24	0	22	22	0
	CYANIDE	12	0	1	12	0	0	12	0	0	11	0	0
	CHLORIDE	12	12	0	12	12	0	24	24	0	22	22	0
	COLOUR	12	2	7	12	0	11	24	0	20	22	0	19
	CONDUCTIVITY	12	12	0	12	12	0	24	24	0	22	22	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

		SITE											
		RAW			TREATED			SITE 1			SITE 2		
SCAN	PARAMETER	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHEMISTRY (LAB)	FLUORIDE	12	12	0	12	12	0	24	24	0	22	22	0
	HARDNESS	12	12	0	12	12	0	24	24	0	22	22	0
	IONCAL	12	12	0	12	12	0	24	24	0	22	22	0
	LANGELIERS INDEX	12	12	0	12	12	0	24	24	0	22	22	0
	MAGNESIUM	12	12	0	12	12	0	24	24	0	22	22	0
	SODIUM	12	12	0	12	12	0	24	24	0	22	22	0
	AMMONIUM TOTAL	12	1	6	12	1	6	24	3	12	22	1	13
	NITRITE	12	7	5	12	0	8	24	0	19	22	0	15
	TOTAL NITRATES	12	12	0	12	12	0	24	24	0	22	22	0
	NITROGEN TOT KJELD	12	12	0	12	12	0	24	24	0	22	22	0
	PH	12	12	0	12	12	0	24	24	0	22	22	0
	PHOSPHORUS FIL REACT	12	8	3	12	0	5	.	.	.	.	.	.
	PHOSPHORUS TOTAL	12	12	0	12	1	10	.	.	.	.	.	.
	SULPHATE	12	12	0	12	12	0	24	24	0	22	22	0
	TURBIDITY	12	12	0	12	12	0	24	18	6	22	17	5
*TOTAL SCAN CHEMISTRY (LAB)		252	210	22	252	182	40	444	357	57	407	326	52
METALS	SILVER	12	0	4	11	0	3	24	0	8	22	0	6
	ALUMINUM	12	12	0	11	11	0	24	24	0	22	22	0
	ARSENIC	12	10	2	11	2	9	24	2	22	22	1	20
	BARIUM	12	12	0	11	11	0	24	24	0	22	22	0
	BORON	12	10	2	11	11	0	24	21	3	22	20	2
	BERYLLIUM	12	0	11	11	0	8	24	0	14	22	0	9

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE	SITE 1 TOTAL	SITE 1 POSITIVE	SITE 1 TRACE	SITE 2 TOTAL	SITE 2 POSITIVE	SITE 2 TRACE
METALS	CADMIUM	12	0	4	11	0	2	24	0	7	22	0	6
	COBALT	12	2	10	11	0	11	24	0	22	22	0	22
	CHROMIUM	12	6	6	11	6	3	24	13	8	22	6	10
	COPPER	12	12	0	11	6	5	24	24	0	22	22	0
	IRON	12	11	0	11	1	6	24	0	8	22	0	20
	MERCURY	12	0	12	12	3	9	12	2	10	11	1	10
	MANGANESE	12	11	0	11	9	2	24	17	7	22	22	0
	MOLYBDENUM	12	9	3	11	11	0	24	24	0	22	22	0
	NICKEL	12	3	9	11	0	10	24	3	21	22	3	18
	LEAD	12	11	1	11	1	7	24	23	1	22	22	0
	ANTIMONY	12	12	0	11	11	0	24	24	0	22	22	0
	SELENIUM	12	1	7	11	1	7	24	0	18	22	1	16
	STRONTIUM	12	12	0	11	11	0	24	24	0	22	22	0
	TITANIUM	12	11	1	11	10	1	24	21	3	22	17	5
	THALLIUM	12	1	9	11	0	4	24	0	11	22	0	6
	URANIUM	12	12	0	11	9	2	24	22	2	22	20	2
	VANADIUM	12	10	2	11	3	8	24	8	16	22	7	15
	ZINC	12	11	1	11	5	6	24	24	0	22	21	1
*TOTAL SCAN METALS		288	179	84	265	122	103	564	300	181	517	273	168
*TOTAL GROUP INORGANIC & PHYSICAL		576	425	106	589	376	143	1151	800	238	1056	731	220
CHLOROAROMATICS	HEXACHLOROBUTADIENE	11	0	0	12	0	0	12	0	0	11	0	0
	123 TRICHLOROBENZENE	11	0	0	12	0	0	12	0	0	11	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE	SITE 1 TOTAL	SITE 1 POSITIVE	SITE 1 TRACE	SITE 2 TOTAL	SITE 2 POSITIVE	SITE 2 TRACE
CHLOROAROMATICS	1234 T-CHLOROBENZENE	11	0	0	12	0	0	12	0	0	11	0	0
	1235 T-CHLOROBENZENE	11	0	0	12	0	0	12	0	0	11	0	0
	124 TRICHLOROBENZENE	11	0	0	12	0	0	12	0	0	11	0	0
	1245 T-CHLOROBENZENE	11	0	0	12	0	0	12	0	0	11	0	0
	135 TRICHLOROBENZENE	11	0	0	12	0	0	12	0	0	11	0	0
	HCB	11	0	0	12	0	0	12	0	0	11	0	0
	HEXACHLOROETHANE	11	0	0	12	0	0	12	0	0	11	0	0
	OCTACHLOROSTYRENE	11	0	0	12	0	0	12	0	0	11	0	0
	PENTACHLOROBENZENE	11	0	0	12	0	0	12	0	0	11	0	0
	236 TRICHLOROTOLUENE	11	0	0	12	0	0	12	0	0	11	0	0
	245 TRICHLOROTOLUENE	11	0	0	12	0	0	12	0	0	11	0	0
	26A TRICHLOROTOLUENE	11	0	0	12	0	0	12	0	0	11	0	0
*TOTAL SCAN CHLOROAROMATICS		154	0	0	168	0	0	168	0	0	154	0	0
CHLOROPHENOLS	234 TRICHLOROPHENOL	2	0	0	2	0	0	.	.	.	.	.	.
	2345 T-CHLOROPHENOL	2	0	0	2	0	0	.	.	.	.	.	.
	2356 T-CHLOROPHENOL	2	0	0	2	0	0	.	.	.	.	.	.
	245-TRICHLOROPHENOL	2	0	0	2	0	0	.	.	.	.	.	.
	246-TRICHLOROPHENOL	2	0	0	2	0	0	.	.	.	.	.	.
	PENTACHLOROPHENOL	2	0	0	2	0	0	.	.	.	.	.	.
*TOTAL SCAN CHLOROPHENOLS		12	0	0	12	0	0	0	0	0	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE	SITE 1 TOTAL	SITE 1 POSITIVE	SITE 1 TRACE	SITE 2 TOTAL	SITE 2 POSITIVE	SITE 2 TRACE
PAH	PHENANTHRENE	12	0	0	12	0	0	.	.	.	.	.	.
	ANTHRACENE	12	0	0	12	0	0	.	.	.	.	.	.
	FLUORANTHENE	12	0	0	12	0	0	.	.	.	.	.	.
	PYRENE	12	0	0	12	0	0	.	.	.	.	.	.
	BENZO(A)ANTHRACENE	12	0	0	12	0	0	.	.	.	.	.	.
	CHRYSENE	12	0	0	12	0	0	.	.	.	.	.	.
	DIMETH. BENZ(A)ANTHR	3	0	0	3	0	0	.	.	.	.	.	.
	BENZO(E) PYRENE	12	0	0	12	0	0	.	.	.	.	.	.
	BENZO(B) FLUORANTHEN	12	0	0	12	0	0	.	.	.	.	.	.
	PERYLENE	12	0	0	12	0	0	.	.	.	.	.	.
	BENZO(K) FLUORANTHEN	12	0	0	12	0	0	.	.	.	.	.	.
	BENZO(A) PYRENE	5	0	0	5	0	0	.	.	.	.	.	.
	BENZO(G,H,I) PERYLEN	12	0	0	12	0	0	.	.	.	.	.	.
	DIBENZO(A,H) ANTHRAC	12	0	0	12	0	0	.	.	.	.	.	.
	INDENO(1,2,3-C,D) PY	12	0	0	12	0	0	.	.	.	.	.	.
	BENZO(B) CHRYSENE	12	0	0	12	0	0	.	.	.	.	.	.
	CORONENE	12	0	0	12	0	0	.	.	.	.	.	.
*TOTAL SCAN PAH		188	0	0	188	0	0	0	0	0	0	0	0
PESTICIDES & PCB	ALDRIN	11	0	0	12	0	0	12	0	0	11	0	0
	ALPHA BHC	11	0	6	12	0	4	12	0	3	11	0	3
	BETA BHC	11	0	0	12	0	0	12	0	0	11	0	0
	LINDANE	11	0	1	12	0	1	12	0	0	11	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE	SITE 1 TOTAL	SITE 1 POSITIVE	SITE 1 TRACE	SITE 2 TOTAL	SITE 2 POSITIVE	SITE 2 TRACE
PESTICIDES & PCB	ALPHA CHLORDANE	11	0	0	12	0	0	12	0	0	11	0	0
	GAMMA CHLORDANE	11	0	0	12	0	0	12	0	0	11	0	0
	DIELDRIN	11	0	0	12	0	0	12	0	0	11	0	0
	METHOXYCHLOR	11	0	0	12	0	0	12	0	0	11	0	0
	ENDOSULFAN 1	11	0	0	12	0	0	12	0	0	11	0	0
	ENDOSULFAN II	11	0	0	12	0	0	12	0	0	11	0	0
	ENDRIN	11	0	0	12	0	0	12	0	0	11	0	0
	ENDOSULFAN SULPHATE	11	0	0	12	0	0	12	0	0	11	0	0
	HEPTACHLOR EPOXIDE	11	0	0	12	0	0	12	0	0	11	0	0
	HEPTACHLOR	11	0	0	12	0	0	12	0	0	11	0	0
	MIREX	11	0	0	12	0	0	12	0	0	11	0	0
	OXYCHLORDANE	11	0	0	12	0	0	12	0	0	11	0	0
	OPDDT	11	0	0	12	0	0	12	0	0	11	0	0
	PCB	11	0	0	12	0	0	12	0	0	11	0	0
	DDD	11	0	0	12	0	0	12	0	0	11	0	0
	PPDDE	11	0	0	12	0	0	12	0	0	11	0	0
	PPDDT	11	0	0	12	0	0	12	0	0	11	0	0
	AMETRINE	12	0	0	12	0	0	7	0	0	6	0	0
	ATRAZINE	12	0	1	12	0	1	7	0	0	6	0	1
	ATRATONE	12	0	0	12	0	0	7	0	0	6	0	0
	CYANAZINE (BLADEX)	12	0	0	12	0	0	7	0	0	6	0	0
	D-ETHYL ATRAZINE	12	0	0	12	0	0	7	0	0	6	0	0
	D-ETHYL SIMAZINE	12	0	0	12	0	0	7	0	0	6	0	0
	PROMETONE	12	0	0	12	0	0	7	0	0	6	0	0
	PROPAZINE	12	0	0	12	0	0	7	0	0	6	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

		SITE											
		RAW			TREATED			SITE 1			SITE 2		
SCAN	PARAMETER	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	PROMETRYNE	12	0	0	12	0	0	7	0	0	6	0	0
	METRIBUZIN (SENCOR)	12	0	0	12	0	0	7	0	0	6	0	0
	SIMAZINE	12	0	0	12	0	0	7	0	0	6	0	0
	ALACHLOR (LASSO)	12	0	0	12	0	0	7	0	0	6	0	0
	METOLACHLOR	12	0	0	12	0	0	7	0	0	6	0	0
*TOTAL SCAN PESTICIDES & PCB		387	0	8	408	0	6	343	0	3	309	0	4
PHENOLICS	PHENOLICS	12	10	1	12	8	3	.	.	.	.	.	.
*TOTAL SCAN PHENOLICS		12	10	1	12	8	3	0	0	0	0	0	0
SPECIFIC PESTICIDES	TOXAPHENE	11	0	0	12	0	0	12	0	0	11	0	0
	2,4,5-T	2	0	0	2	0	0	.	.	.	.	.	.
	2,4-D	2	0	0	2	0	0	.	.	.	.	.	.
	2,4-DB	2	0	0	2	0	0	.	.	.	.	.	.
	2,4 D PROPIONIC ACID	2	0	0	2	0	0	.	.	.	.	.	.
	DICAMBA	2	0	0	2	0	0	.	.	.	.	.	.
	PICHLORAM	0	0	0	0	0	0	.	.	.	.	.	.
	SILVEX	2	0	0	2	0	0	.	.	.	.	.	.
	DIAZINON	2	0	0	2	0	0	.	.	.	.	.	.
	DICHLOROVOS	2	0	0	2	0	0	.	.	.	.	.	.
	CHLORPYRIFOS	2	0	0	2	0	0	.	.	.	.	.	.

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE	SITE 1 TOTAL	SITE 1 POSITIVE	SITE 1 TRACE	SITE 2 TOTAL	SITE 2 POSITIVE	SITE 2 TRACE
SPECIFIC PESTICIDES	ETHION	2	0	0	2	0	0	.	.	.	.	.	.
	AZINPHOS-METHYL	1	0	0	1	0	0	.	.	.	.	.	.
	MALATHION	2	0	0	2	0	0	.	.	.	.	.	.
	MEVINPHOS	2	0	0	2	0	0	.	.	.	.	.	.
	METHYL PARATHION	2	0	0	2	0	0	.	.	.	.	.	.
	METHYLTRITHION	2	0	0	2	0	0	.	.	.	.	.	.
	PARATHION	2	0	0	2	0	0	.	.	.	.	.	.
	PHORATE	2	0	0	2	0	0	.	.	.	.	.	.
	RELDAN	2	0	0	2	0	0	.	.	.	.	.	.
	RONNEL	2	0	0	2	0	0	.	.	.	.	.	.
	AMINOCARB	0	0	0	0	0	0	.	.	.	.	.	.
	BENONYL	1	0	0	1	0	0	.	.	.	.	.	.
	BUX	0	0	0	0	0	0	.	.	.	.	.	.
	CARBOFURAN	2	0	0	2	0	0	.	.	.	.	.	.
	CICP	2	0	0	2	0	0	.	.	.	.	.	.
	DIALLATE	2	0	0	2	0	0	.	.	.	.	.	.
	EPTAM	1	0	0	1	0	0	.	.	.	.	.	.
	IPC	2	0	0	2	0	0	.	.	.	.	.	.
	PROPOXUR	2	0	0	2	0	0	.	.	.	.	.	.
	CARBARYL	2	0	0	2	0	0	.	.	.	.	.	.
	BUTYLATE	2	0	0	2	0	0	.	.	.	.	.	.
*TOTAL SCAN SPECIFIC PESTICIDES		64	0	0	65	0	0	12	0	0	11	0	0
VOLATILES	BENZENE	12	0	0	12	0	0	10	0	0	10	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

		SITE											
		RAW			TREATED			SITE 1			SITE 2		
SCAN	PARAMETER	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
VOLATILES	TOLUENE	12	0	0	12	0	2	10	0	4	10	0	2
	ETHYLBENZENE	12	0	0	12	0	1	10	0	3	10	0	0
	P-XYLENE	12	0	0	12	0	0	10	0	0	10	0	0
	M-XYLENE	12	0	0	12	0	0	10	0	0	10	0	0
	O-XYLENE	12	0	0	12	0	0	10	0	0	10	0	0
	STYRENE	12	0	5	12	0	2	10	0	2	10	0	2
	1,1 DICHLOROETHYLENE	12	0	0	12	0	0	10	0	0	10	0	0
	METHYLENE CHLORIDE	12	0	0	12	0	0	10	0	0	10	0	0
	T1,2DICHLOROETHYLENE	12	0	0	12	0	0	10	0	0	10	0	0
	1,1 DICHLOROETHANE	12	0	0	12	0	0	10	0	0	10	0	0
	CHLOROFORM	12	0	3	12	12	0	10	10	0	10	10	0
	111, TRICHLOROETHANE	12	0	2	12	0	0	10	0	1	10	0	1
	1,2 DICHLOROETHANE	12	0	0	12	0	0	10	0	0	10	0	0
	CARBON TETRACHLORIDE	12	0	0	12	0	0	10	0	0	10	0	0
	1,2 DICHLOROPROPANE	12	0	0	12	0	0	10	0	0	10	0	0
	TRICHLOROETHYLENE	12	0	0	12	0	0	10	0	0	10	0	0
	DICHLOROBROMOMETHANE	12	0	4	12	12	0	10	10	0	10	10	0
	112 TRICHLOROETHANE	12	0	0	12	0	0	10	0	0	10	0	0
	CHLORODIBROMOMETHANE	12	0	3	12	12	0	10	10	0	10	10	0
	T-CHLOROETHYLENE	12	0	0	12	0	2	10	0	3	10	0	1
	BROMOFORM	12	0	0	12	0	10	10	0	9	10	0	10
	1122 T-CHLOROETHANE	12	0	0	12	0	0	10	0	0	10	0	0
	CHLOROBENZENE	12	0	0	12	0	0	10	0	0	10	0	0
	1,4 DICHLOROBENZENE	12	0	0	12	0	0	10	0	0	10	0	0
	1,3 DICHLOROBENZENE	12	0	0	12	0	0	10	0	0	10	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM ELGIN

SUMMARY TABLE OF RESULTS (1989)

SCAN	PARAMETER	SITE RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE	SITE 1 TOTAL	SITE 1 POSITIVE	SITE 1 TRACE	SITE 2 TOTAL	SITE 2 POSITIVE	SITE 2 TRACE
VOLATILES	1,2 DICHLOROBENZENE	12	0	0	12	0	0	10	0	0	10	0	0
	ETHLYENE DIBROMIDE	12	0	0	12	0	0	10	0	0	10	0	0
	TOTL TRIHALOMETHANES	12	0	0	12	12	0	10	10	0	10	10	0
*TOTAL SCAN VOLATILES		348	0	17	348	48	17	290	40	22	290	40	16
*TOTAL GROUP ORGANIC		1165	10	26	1201	56	26	813	40	25	764	40	20
TOTAL		1777	459	132	1826	437	169	2000	845	263	1853	774	240

KEY TO TABLE 5 and 6

A ONTARIO DRINKING WATER OBJECTIVES (ODWO)
1. Maximum Acceptable Concentration (MAC)
1+. MAC for Total Trihalomethanes
1*. MAC for Bacteriological Analyses
Poor water quality is indicated when :
- total coliform counts > 0 < 5
- P/A Bottle Test is present after 48 hours
- Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
- Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
- Standard Plate Count should not exceed 500 organisms per ml at 35 ^{0}C within 48 hours

2. Interim Maximum Acceptable Concentration (IMAC)
3. Maximum Desirable Concentration (MDC)
4. Aesthetic or Recommended Operational Guideline
- hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.

B HEALTH & WELFARE CANADA (H&W)
1. Maximum Acceptable Concentration (MAC)
2. Proposed MAC
3. Interim MAC
4. Aesthetic Objective (AO) (for xylenes, the AO is a total)

C WORLD HEALTH ORGANIZATION (WHO)
1. Guideline Value (GV)
2. Tentative GV
3. Aesthetic GV

D US ENVIRONMENTAL PROTECTION AGENCY (EPA)
1. Maximum Contaminant Level (MCL)
2. Suggested No-Adverse Effect Level (SNAEL)
3. Lifetime Health Advisory
4. EPA Ambient Water Quality Criteria

F EUROPEAN ECONOMIC COMMUNITY (EEC)
1. Health Related Guideline Level
2. Aesthetic Guideline Level
3. Maximum Admissable Concentration (MADC)

G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE

H USSR MAXIMUM PERMISSIBLE CONCENTRATION

I NEW YORK STATE AMBIENT WATER GUIDELINE

N/A NONE AVAILABLE

INTERPRETATION OF DATA

The interpretation of analytical results that are obtained from measurements near the limit of detection of the measurement process is subject to greater uncertainty than those at higher concentrations. The principle areas of concern relate to whether the substance has actually been detected, whether it has been properly identified, and whether it is an artifact of the measurement process. In other words, false positives can be caused by the instrumentation or the test procedures used, when in fact these compounds are not present in the sample.

There are several methods to treat data from such measurements:
1. Exclude the low-level data because of this uncertainty factor. Studies of long-term environmental trends and modelling may however, be adversely affected by the exclusion of such data.
2. Qualify these data so the user is aware of the greater uncertainty associated with their use.

For the Drinking Water Surveillance Program, measurements near the limit of detection of the measurement process are reported with the code "<T". Results qualified by "W" indicate a zero measurement. These results are reported for purposes of modelling and long-term trend analysis and no significance should be attributed to a single determination of a substance below "T" (a single determination may well be a false positive). Repeat analysis or additional data are needed before it can be stated with certainty that the substance in question was truly present. On the other hand, it is less likely that repeated detection of a substance at or near the limit of detection at a specific location is solely due to an artifact in the measurement system, and more likely represents a true positive. The average of such data however, is still only an estimate of the amount of substance present subject to the possible biases of the method used.

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident (SEE INTERPRETATION OF RESULTS ABOVE)
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!IV	No Data: Inverted Septum
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded

!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!QU	No Data: Quality Control Unacceptable
!RE	No Data: Received Empty
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
!TX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample
RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UAL	Unreliable: Sample Age Exceeds Normal Limit
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
USD	Unreliable: Sample Decomposition Noted
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours
T# (T06)	Result Taken After # Hours

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
	BACTERIOLOGICAL					
FECAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0		GUIDELINE = 0 (A1)	
JAN	BDL	.	.	.	.	.
FEB	6 T24	.	.	.	.	.
MAR	BDL	.	.	.	.	.
APR	6 <=>	.	.	.	.	.
MAY	BDL	.	.	.	.	.
JUN	BDL	.	.	.	.	.
JUL	BDL	.	.	.	.	.
AUG	BDL	.	.	.	.	.
SEP	76	.	.	.	.	.
OCT	4	.	.	.	.	.
NOV	24	.	.	.	.	.
DEC	12	.	.	.	.	.
STANDRD PLATE CNT MF ( )			DET'N LIMIT = 0		GUIDELINE = 500/ML (A1)	
JAN	.	1 <=>	.	5 <=>	.	0 <=>
FEB	.	124 T24	.	0 <=>	.	0 <=>
MAR	.	1 <=>	.	0 <=>	.	0 <=>
APR	.	69 T48	.	16 T24	.	22 T24
MAY	.	0 <=>	.	5 <=>	.	2 <=>
JUN	.	0 <=>	.	1 <=>	.	.
JUL	.	0 <=>	.	0 <=>	.	5 <=>
AUG	.	0 <=>	.	0 <=>	.	0 <=>
SEP	.	2 <=>	.	1 <=>	.	40
OCT	.	2 <=>	.	1 <=>	.	0 <=>
NOV	.	61	.	1360	.	900
DEC	.	0 <=>	.	0 <=>	.	1 <=>
TOTAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0		GUIDELINE = 5/100ML(A1)	
JAN	148 A3C	0 T24	.	0 T24	.	0 T24
FEB	1580 A3C	0 T24	.	0 T24	.	0 T24
MAR	BDL	0 T24	.	0 T24	.	0 T24
APR	220 A3C	0 T48	.	0 T24	.	0 T24
MAY	7	0	.	0	.	0
JUN	14	0	.	0	.	.
JUL	BDL	0	.	0	.	0
AUG	60 <=>	0	.	0	.	0
SEP	130 A3C	0	.	0	.	0
OCT	30 <=>	0	.	0	.	0
NOV	400 <=>	0	.	0	.	0
DEC	360	0	.	0	.	0
T COLIFORM BCKGRD MF (CT/100ML)			DET'N LIMIT = 0		GUIDELINE = N/A	
JAN	1280 T24	0 T24	.	1 T24	.	0 T24
FEB	28000 A3C	0 T24	.	0 T24	.	0 T24
MAR	12 T24	0 T24	.	0 T24	.	0 T24

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
APR	16000 A3C	1 T48	.	1 T24	.	0 T24
MAY	257	0	.	0	.	0
JUN	282	1	.	1	.	.
JUL	00000 >	0	.	0	.	0
AUG	4200	0	.	0	.	0
SEP	7800 A3C	0	.	0	.	0
OCT	8800 A3C	0	.	0	.	0
NOV	74000 A3C	0	.	0	.	0
DEC	1180	0	.	0	.	0

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
CHEMISTRY (FLD)						
FLD CHLORINE (COMB) ( )			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.	.150	.400	.050	.100	.100
FEB	.	.100	.200	.050	.050	.100
MAR	.	.150	.300	.050	.050	.050
APR	.	.050	.200	.050	.150	.050
MAY	.	.050	.400	.100	.050	.100
JUN	.	.150	.400	.100	.	.
JUL	.	.100	.300	.050	.050	.050
AUG	.	.150	.200	.050	.050	.050
SEP	.	.050	.200	.050	.050	.050
OCT	.	.100	.200	.050	.050	.100
NOV	.	.100	.100	.250	.050	.100
DEC	.	.100	.400	.100	.150	.100
FLD CHLORINE FREE ( )			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.	.800	.400	.800	.300	.350
FEB	.	.650	.400	.750	.300	.350
MAR	.	.600	.400	.750	.300	.350
APR	.	.800	.500	.800	.200	.350
MAY	.	.750	.400	.750	.150	.250
JUN	.	.800	.100	.750	.	.
JUL	.	.850	.300	.750	.150	.200
AUG	.	.800	.600	.950	.150	.150
SEP	.	.950	.500	.800	.150	.150
OCT	.	.900	.500	.750	.150	.150
NOV	.	.850	.550	.950	.100	.150
DEC	.	.800	.200	.650	.050	.150
FLD CHLORINE (TOTAL) ( )			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.	.950	.800	.850	.400	.450
FEB	.	.750	.600	.800	.350	.450
MAR	.	.750	.700	.800	.350	.400
APR	.	.850	.700	.850	.350	.400
MAY	.	.800	.800	.850	.200	.350
JUN	.	.950	.500	.850	.	.
JUL	.	.950	.600	.800	.200	.250
AUG	.	.950	.800	1.000	.200	.200
SEP	.	1.000	.700	.850	.200	.200
OCT	.	1.000	.700	.800	.200	.250
NOV	.	.950	.650	1.200	.150	.250
DEC	.	.900	.600	.750	.200	.250
FLD PH (DMNSLESS)			DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)	
JAN	7.600	7.450	7.300	7.300	7.500	7.450
FEB	7.800	7.350	7.500	7.300	7.500	7.450
MAR	8.000	7.450	7.400	7.300	7.400	7.500

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
APR	8.400	7.350	7.400	7.350	7.450	7.450
MAY	8.000	7.450	7.500	7.250	7.550	7.500
JUN	7.800	7.300	7.400	7.300	.	.
JUL	7.800	7.300	7.500	7.300	7.500	7.350
AUG	7.500	7.300	7.300	7.250	7.550	7.450
SEP	8.000	7.500	7.500	7.450	7.500	7.500
OCT	7.800	7.450	7.700	7.450	7.350	7.450
NOV	8.000	7.400	7.500	7.300	7.300	7.500
DEC	7.600	7.450	7.500	7.450	7.550	7.500
FLD TEMPERATURE (OEG.C)			DET'N LIMIT = N/A		GUIDELINE = 15 (A1)	
JAN	2.000	1.000	11.500	4.500	17.500	7.000
FEB	2.000	1.000	9.500	.	20.000	4.500
MAR	5.000	1.500	10.000	2.500	20.000	5.500
APR	5.000	4.000	10.500	4.500	18.000	6.500
MAY	8.000	8.000	17.500	7.500	21.000	8.500
JUN	10.000	9.000	14.500	11.500	.	.
JUL	13.000	14.000	17.000	16.000	24.000	16.000
AUG	15.000	17.000	17.500	18.500	21.000	19.500
SEP	17.000	21.500	18.500	19.500	24.000	20.000
OCT	15.000	14.500	17.500	15.000	18.500	16.000
NOV	12.000	11.000	16.500	12.000	22.000	14.500
DEC	30.000	4.000	13.000	6.000	19.500	9.500
FLD TURBIDITY (FTU)			DET'N LIMIT = N/A		GUIDELINE = 1.0 (A1)	
JAN	58.000	.070	.130	.130	.120	.110
FEB	46.000	.100	.120	.110	.080	.130
MAR	5.000	.120	.100	.090	.130	.150
APR	132.000	.230	.110	.130	.130	.080
MAY	16.000	.100	.090	.080	.100	.100
JUN	5.000	.110	.160	.130	.	.
JUL	40.100	.120	.120	.120	.110	.110
AUG	7.000	.090	.150	.100	.120	.090
SEP	116.000	.100	.140	.110	.090	.110
OCT	20.000	.090	.120	.090	.080	.100
NOV	15.600	.110	.180	.130	.100	.110
DEC	135.000	.110	.140	.190	.090	.200

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
CHEMISTRY (LAB)						
ALKALINITY (MG/L)			DET'N LIMIT = .200		GUIDELINE = 30-500 (A4)	
JAN	94.000	86.400	87.900	87.600	90.200	89.800
FEB	102.200	93.700	92.900	93.700	93.100	93.300
MAR	101.900	95.300	96.100	95.100	96.400	96.000
APR	106.000	95.100	96.300	95.300	93.500	93.600
MAY	100.800	94.300	93.600	94.000	96.100	94.700
JUN	98.300	90.000	91.400	91.600	.	.
JUL	103.500	95.200	93.900	94.500	96.400	95.400
AUG	106.900	98.500	100.000	100.100	96.200	96.600
SEP	98.800	90.300	91.900	92.200	90.600	90.900
OCT	98.200	90.400	91.700	92.300	90.700	93.000
NOV	100.900	91.900	92.600	92.600	91.300	90.700
DEC	97.900	90.100	91.600	92.200	91.100	91.000
CALCIUM (MG/L)			DET'N LIMIT = .100		GUIDELINE = 100 (F2)	
JAN	35.000	35.000	32.400	34.200	35.400	33.800
FEB	35.600	36.600	36.600	36.000	36.000	35.600
MAR	37.200	37.400	37.000	37.400	37.800	37.600
APR	41.200	41.000	40.000	40.200	39.800	39.800
MAY	37.400	36.600	37.800	40.600	40.000	40.200
JUN	34.600	35.200	35.800	36.600	.	.
JUL	40.400	39.800	39.200	38.600	40.200	40.400
AUG	38.200	37.800	37.400	38.400	37.600	38.000
SEP	34.800	36.800	39.800	39.200	36.000	35.400
OCT	35.400	35.800	35.800	35.400	36.800	37.400
NOV	35.400	36.200	37.000	36.400	34.800	35.200
DEC	36.000	40.900	40.800	40.400	40.200	40.000
CYANIDE (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = .200 (A1)	
JAN	BDL	BDL	.	BDL	.	BDL
FEB	BDL	BDL	.	BDL	.	BDL
MAR	.003 <T	BDL	.	BDL	.	BDL
APR	BDL	BDL	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	BDL	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	BDL	.	BDL	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL
CHLORIDE (MG/L)			DET'N LIMIT = .200		GUIDELINE = 250 (A3)	
JAN	11.100	12.300	12.100	12.100	12.700	12.500
FEB	13.700	14.600	14.800	14.700	14.600	14.500
MAR	13.500	14.700	14.600	14.700	15.300	15.100

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
APR	14.500	15.300	14.900	14.900	14.900	14.800
MAY	13.600	15.000	15.200	14.900	15.200	15.000
JUN	13.700	15.200	15.300	15.300	.	.
JUL	13.600	15.200	15.100	15.100	15.600	15.500
AUG	13.700	15.400	15.500	15.300	15.600	15.500
SEP	14.100	15.200	15.300	15.200	15.600	15.600
OCT	13.700	15.100	15.100	15.100	15.200	15.100
NOV	14.100	15.100	14.700	14.700	14.900	14.800
DEC	12.800	13.300	14.000	14.100	13.700	13.600
COLOUR (HZU)			DET'N LIMIT = .5		GUIDELINE = 5.0 (A3)	
JAN	1.000 <T	.500 <T	.500 <T	1.000 <T	1.000 <T	1.000 <T
FEB	BDL	.500 <T	BDL	BDL	.500 <T	BDL
MAR	2.500	1.500 <T	1.000 <T	1.000 <T	1.500 <T	1.000 <T
APR	BDL	.500 <T	.500 <T	.500 <T	.500 <T	.500 <T
MAY	1.500 <T	.500 <T	.500 <T	1.000 <T	1.000 <T	1.000 <T
JUN	2.000 <T	1.000 <T	1.000 <T	1.000 <T	.	.
JUL	.500 <T	.500 <T	1.000 <T	1.000 <T	1.500 <T	1.500 <T
AUG	2.000 <T	.500 <T	1.000 <T	.500 <T	.500 <T	.500 <T
SEP	BDL	.500 <T	.500 <T	.500 <T	1.000 <T	.500 <T
OCT	2.000 <T	.500 <T	.500 <T	.500 <T	1.000 <T	1.000 <T
NOV	.500	.500 <T	.500 <T	.500 <T	.500 <T	.500 <T
DEC	2.000 <T	BDL	BDL	BDL	BDL	BDL
CONDUCTIVITY (UMHO/CM)			DET'N LIMIT = 1		GUIDELINE = 400 (F2)	
JAN	255	270	265	266	278	276
FEB	279	290	291	291	287	287
MAR	288	293	295	293	298	296
APR	294	309	308	307	300	300
MAY	294	300	294	294	294	295
JUN	280	286	287	288	.	.
JUL	290	296	295	295	298	299
AUG	293	298	299	298	294	294
SEP	274	286	296	294	283	285
OCT	280	288	289	288	289	294
NOV	274	291	294	294	285	284
DEC	265	284	288	290	285	285
FLUORIDE (MG/L)			DET'N LIMIT = .01		GUIDELINE = 2.400 (A1)	
JAN	.140	1.160	.820	1.020	1.160	1.120
FEB	.100	1.280	1.240	.860 RRV	1.160	1.160
MAR	.180	1.280	1.260	1.220	1.240	1.180
APR	.140	1.300	1.160	1.340	1.220	1.180
MAY	.100	1.240	1.180	1.220	1.280	1.220
JUN	.120	1.520	1.180	1.220	.	.
JUL	.160	1.140	1.880	1.640	1.320	1.280
AUG	.120	1.240	1.020	.940	1.200	1.220

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
SEP	.180	1.460	1.140	1.840	1.440	1.440
OCT	.120	1.600	1.300	.880	1.360	1.380
NOV	.120	1.220	1.100	1.180	1.280	1.200
DEC	.120	.120	.080	.120	.320	.280
HARDNESS (MG/L)			DET'N LIMIT = .500		GUIDELINE = 80-100 (A4)	
JAN	120.000	120.000	114.000	120.000	123.000	119.000
FEB	124.000	127.000	128.000	125.000	126.000	125.000
MAR	128.000	129.000	128.000	128.000	129.000	129.000
APR	139.000	138.000	136.000	136.000	135.000	135.000
MAY	131.000	128.000	131.000	138.000	136.000	136.000
JUN	122.000	124.000	125.000	128.000	.	.
JUL	137.000	136.000	133.000	132.000	136.000	138.000
AUG	130.000	129.000	126.000	131.000	127.000	129.000
SEP	121.000	126.000	135.000	133.000	124.000	123.000
OCT	124.000	124.000	124.000	124.000	128.000	128.000
NOV	124.000	126.000	128.000	126.000	122.000	123.000
DEC	124.000	136.500	138.000	137.000	136.000	135.000
IONCAL (DMNSLESS)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	4.562	4.820	.537	3.858	2.982	1.058
FEB	1.024	1.154	2.455	.552	1.564	.159
MAR	.175	1.954	.999	1.917	1.445	1.205
APR	5.986	6.806	5.126	7.004	7.281	7.776
MAY	3.019	2.923	5.019	8.580	6.638	9.504
JUN	1.823	1.720	2.353	5.182	.	.
JUL	5.903	6.337	7.165	5.690	5.504	7.652
AUG	1.670	.302	4.110	.783	.990	.364
SEP	3.416	1.243	3.557	2.748	.300	.058
OCT	.431	2.547	.591	.130	3.208	2.360
NOV	2.368	.718	.423	2.157	1.578	.934
DEC	.739	8.115	5.734	4.409	5.198	4.979
LANGELIERS INDEX (DMNSLESS)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.306	.113	.139	.261	.334	.293
FEB	.400	.130	.096	.083	.101	.137
MAR	.384	.246	.114	.155	.223	.180
APR	.493	.429	.474	.392	.372	.392
MAY	.500	.429	.432	.515	.538	.503
JUN	.390	.287	.201	.271	.	.
JUL	.166	.051	.169	.155	.170	.147
AUG	.535	.503	.494	.516	.472	.468
SEP	.397	.348	.346	.311	.291	.254
OCT	.470	.346	.351	.370	.299	.405
NOV	.384	.276	.298	.401	.289	.371
DEC	.412	.374	.458	.456	.491	.368

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
MAGNESIUM (MG/L)			DET'N LIMIT = .050		GUIDELINE = 30 (F2)	
JAN	8.000	8.000	8.100	8.300	8.400	8.400
FEB	8.700	8.600	8.800	8.600	8.700	8.800
MAR	8.600	8.600	8.500	8.400	8.500	8.500
APR	8.800	8.700	8.800	8.700	8.500	8.700
MAY	9.000	8.800	9.000	9.000	8.700	8.800
JUN	8.600	8.700	8.600	8.900	.	.
JUL	8.900	8.800	8.600	8.700	8.700	8.900
AUG	8.300	8.300	8.000	8.500	8.100	8.100
SEP	8.300	8.200	8.600	8.500	8.300	8.600
OCT	8.500	8.500	8.400	8.600	8.600	8.400
NOV	8.600	8.600	8.600	8.600	8.500	8.500
DEC	8.390	8.300	8.700	8.700	8.500	8.600
SODIUM (MG/L)			DET'N LIMIT = .200		GUIDELINE = 200 (C3)	
JAN	6.400	7.200	6.400	6.600	7.200	7.200
FEB	7.600	7.800	8.200	7.800	7.800	7.800
MAR	8.000	8.200	8.200	8.600	8.600	8.400
APR	8.800	9.200	8.800	9.200	8.800	8.800
MAY	7.800	8.200	8.200	8.400	8.200	8.600
JUN	7.800	8.200	8.600	9.000	.	.
JUL	8.000	8.600	8.800	8.600	8.400	8.600
AUG	8.000	8.400	7.800	7.800	8.000	8.000
SEP	8.000	8.400	8.000	8.000	8.000	8.200
OCT	8.000	8.600	8.200	8.000	8.400	8.400
NOV	7.800	8.000	8.200	8.200	8.400	8.100
DEC	7.400	7.600	7.000	7.000	7.000	6.800
AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002		GUIDELINE = .05 (F2)	
JAN	.004 <T	.006 <T	.010	.008 <T	.006 <T	.008 <T
FEB	.008 <T	.010	.010	.010	.008 <T	.008 <T
MAR	.004 <T	BDL	.002 <T	BDL	.010	BDL
APR	BDL	.004 <T	.006 <T	.006 <T	.002 <T	.004 <T
MAY	.002 <T	.002 <T	.004 <T	.006 <T	BDL	BDL
JUN	.020	.002 <T	BDL	BDL	.	.
JUL	.002 <T	.008 <T	.008 <T	.006 <T	.004 <T	.004 <T
AUG	.004 <T	.002 <T	BDL	BDL	.002 <T	.002 <T
SEP	BDL	BDL	.002 <T	.002 <T	BDL	.002 <T
OCT	BDL	BDL	.002 <T	BDL	BDL	.004 <T
NOV	BDL	BDL	.002 <T	BDL	BDL	.004 <T
DEC	BDL	BDL	BDL	BDL	BDL	BDL
NITRITE (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = 1.000 (A1)	
JAN	.005	.002 <T	.004 <T	.002 <T	.002 <T	.002 <T
FEB	.008	.001 <T	.002 <T	.002 <T	.002 <T	.002 <T
MAR	.003 <T	BDL	BDL	BDL	.001 <T	BDL
APR	.015	.001 <T	.001 <T	.001 <T	.001 <T	.001 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
MAY	.003 <T	BDL	.003 <T	.003 <T	.003 <T	.003 <T
JUN	.007	.001 <T	.002 <T	.002 <T	.	.
JUL	.002 <T	.001 <T	.001 <T	.001 <T	.001 <T	BDL
AUG	.008	BDL	BDL	BDL	BDL	BDL
SEP	.015	.003 <T	.002 <T	.002 <T	.003 <T	.003 <T
OCT	.001 <T	.001 <T	.001 <T	BDL	BDL	BDL
NOV	.002 <T	BDL	.001 <T	.001 <T	.001 <T	.001 <T
DEC	.022	.003 <T	.001 <T	.001 <T	.001 <T	BDL
TOTAL NITRATES (MG/L)			DET'N LIMIT = .020		GUIDELINE = 10.000 (A1)	
JAN	.190	.210	.200	.200	.195	.210
FEB	.270	.255	.230	.220	.195	.200
MAR	.195	.200	.190	.185	.215	.210
APR	.545	.450	.380	.365	.285	.295
MAY	.325	.310	.340	.310	.285	.290
JUN	.260	.245	.195	.170	.	.
JUL	.370	.255	.250	.245	.255	.255
AUG	.220	.210	.210	.205	.185	.190
SEP	.185	.185	.190	.190	.180	.185
OCT	.200	.185	.185	.180	.185	.190
NOV	.140	.125	.135	.160	.120	.125
DEC	.215	.210	.205	.200	.195	.200
NITROGEN TOT KJELD (MG/L)			DET'N LIMIT = .020		GUIDELINE = N/A	
JAN	.425	.120	.140	.140	.130	.140
FEB	.425	.140	.150	.150	.140	.110
MAR	.260	.190	.180	.170	.210	.190
APR	.510	.180	.210	.170	.170	.170
MAY	.420	.200	.160	.150	.160	.150
JUN	.280	.150	.180	.190	.	.
JUL	.600	.210	.230	.250	.300	.170
AUG	.270	.160	.170	.160	.160	.150
SEP	.540	.160	.160	.150	.160	.150
OCT	.270	.210	.170	.210	.180	.170
NOV	.450	.140	.160	.190	.170	.150
DEC	.320	.210	.190	.200	.210	.180
PH (DMNSLESS)			DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)	
JAN	8.210	8.060	8.110	8.210	8.260	8.240
FEB	8.270	8.030	8.000	7.990	8.010	8.050
MAR	8.240	8.130	8.000	8.040	8.100	8.060
APR	8.290	8.280	8.330	8.250	8.240	8.260
MAY	8.360	8.330	8.320	8.370	8.390	8.360
JUN	8.290	8.220	8.120	8.180	.	.
JUL	7.980	7.910	8.040	8.030	8.020	8.000
AUG	8.360	8.370	8.360	8.370	8.350	8.340
SEP	8.290	8.260	8.220	8.190	8.210	8.180

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
OCT	8.360	8.270	8.270	8.290	8.210	8.300
NOV	8.260	8.190	8.200	8.310	8.220	8.300
DEC	8.290	8.240	8.320	8.320	8.360	8.240
PHOSPHORUS FIL REACT (MG/L)			DET'N LIMIT = .0005		GUIDELINE = N/A	
JAN	.005	BDL	.	.	.	.
FEB	.009	BDL	.	.	.	.
MAR	.001 <T	BDL	.	.	.	.
APR	.028	.001 <T	.	.	.	.
MAY	.003	BDL	.	.	.	.
JUN	.001 <T	.000 <T	.	.	.	.
JUL	.005	.001 <T	.	.	.	.
AUG	.004	BDL	.	.	.	.
SEP	.029	.002 <T	.	.	.	.
OCT	.002 <T	BDL	.	.	.	.
NOV	BDL	BDL	.	.	.	.
DEC	.044	.001 <T	.	.	.	.
PHOSPHORUS TOTAL (MG/L)			DET'N LIMIT = .002		GUIDELINE = .40 (F2)	
JAN	.100	.002 <T	.	.	.	.
FEB	.128	.003 <T	.	.	.	.
MAR	.022	.004 <T	.	.	.	.
APR	.205	.004 <T	.	.	.	.
MAY	.068	.006 <T	.	.	.	.
JUN	.017	.013	.	.	.	.
JUL	.188	.004 <T	.	.	.	.
AUG	.021	.003 <T	.	.	.	.
SEP	.240	.003 <T	.	.	.	.
OCT	.033	.003 <T	.	.	.	.
NOV	.170	.003 <T	.	.	.	.
DEC	.117	BDL	.	.	.	.
SULPHATE (MG/L)			DET'N LIMIT = .200		GUIDELINE = 500. (A3)	
JAN	17.280	24.200	22.230	22.580	24.720	24.000
FEB	19.340	25.830	26.270	26.710	25.030	26.280
MAR	22.790	25.930	25.320	26.280	26.120	26.210
APR	19.990	28.570	27.770	27.170	26.390	26.500
MAY	20.970	23.680	24.770	26.980	24.290	23.840
JUN	21.820	25.700	25.410	25.420	.	.
JUL	21.360	26.460	25.080	25.040	25.980	25.840
AUG	21.420	25.150	25.400	25.420	26.020	25.850
SEP	22.810	28.480	31.420	30.600	26.610	26.810
OCT	22.130	26.010	26.150	25.970	27.040	26.700
NOV	21.820	29.290	31.070	31.910	28.370	28.530
DEC	21.780	30.400	31.150	31.300	30.650	30.700
TURBIDITY (FTU)			DET'N LIMIT = .02		GUIDELINE = 1.00 (A1)	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JAN	78.000	.320	.350	.430	.420	.370
FEB	94.000	.270	.230 <T	.150 <T	.340	.230 <T
MAR	5.500	.350	.250	.300	.300	.300
APR	200.000 >	.370	.340	.350	.490	.520
MAY	26.000	.780	.520	.370	.400	.590
JUN	1.900	.220	.270	.370	.	.
JUL	108.000	.290	.200 <T	.190 <T	.210 <T	.240 <T
AUG	8.100	.570	.550	.910	.920	.530
SEP	200.000 >	.450	.110 <T	.090 <T	.130 <T	.110 <T
OCT	22.000	.510	.450	.670	.470	.360
NOV	160.000	.400	.360	.510	.270	.370
DEC	200.000	.440	.470	.630	.680	.330

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
METALS						
SILVER (UG/L)				DET'N LIMIT = .020	GUIDELINE = 50. (A1)	
JAN	BDL	BDL	BDL	.030 <T	.030 <T	BDL
FEB	BDL	BDL	BDL	BDL	BDL	BDL
MAR	.120 <T	.070 <T	.040 <T	.050 <T	.050 <T	.080 <T
APR	.090 <T	.080 <T	.100 <T	.090 <T	.140 <T	.050 <T
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	ISM	BDL	BDL	.	.
JUL	BDL	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.050 <T	.040 <T	.030 <T	BDL
SEP	.040 <T	.030 <T	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	.030 <T	BDL	.250 <T	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL
ALUMINUM (UG/L)				DET'N LIMIT = .050	GUIDELINE = 100.(A4)	
JAN	290.000	31.320	37.120	42.920	47.560	34.800
FEB	382.800	47.560	45.240	38.280	52.200	41.760
MAR	3.944	75.400	73.080	67.280	70.760	56.840
APR	464.000	53.360	52.200	53.360	56.840	38.280
MAY	162.400	104.400	91.640	75.400	96.280	82.360
JUN	68.000	ISM	81.000	85.000	.	.
JUL	380.000	76.000	85.000	82.000	79.000	62.000
AUG	140.000	71.000	79.000	65.000	98.000	100.000
SEP	360.000	200.000	220.000	230.000	200.000	190.000
OCT	190.000	120.000	120.000	120.000	90.000	90.000
NOV	590.000	91.000	86.000	80.000	110.000	95.000
DEC	620.000	45.000	46.000	46.000	57.000	47.000
ARSENIC (UG/L)				DET'N LIMIT = 0.050	GUIDELINE = 50.0 (A1)	
JAN	1.400	.250 <T	.210 <T	.330 <T	.250 <T	.240 <T
FEB	1.300	.140 <T	.190 <T	.180 <T	.200 <T	BDL
MAR	1.100	.910 <T	1.100	1.000 <T	.770 <T	1.100
APR	1.200	.490 <T	.850 <T	.530 <T	.530 <T	.550 <T
MAY	1.800	1.100	.840 <T	.760 <T	.520 <T	.680 <T
JUN	1.100	ISM	.560 <T	.660 <T	.	.
JUL	1.600	.760 <T	.730 <T	.540 <T	.660 <T	.440 <T
AUG	1.300	.820 <T	.660 <T	.710 <T	.880 <T	.890 <T
SEP	2.000	.980 <T	.990 <T	1.200	.910 <T	1.000 <T
OCT	.800 <T	.430 <T	.350 <T	.320 <T	.100 <T	.240 <T
NOV	1.000 <T	1.300	.470 <T	.370 <T	.370 <T	.370 <T
DEC	1.200	.100 <T	.250 <T	.180 <T	.200 <T	.330 <T
BARIUM (UG/L)				DET'N LIMIT = 0.020	GUIDELINE = 1000. (A1)	
JAN	23.000	18.000	18.800	18.000	20.000	20.000
FEB	29.000	22.000	22.000	21.000	22.000	21.000
MAR	5.300	20.000	19.000	19.000	20.000	20.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
APR	33.000	24.000	25.000	25.000	23.000	22.000
MAY	26.000	23.000	20.000	20.000	21.000	20.000
JUN	21.000	ISM	21.000	21.000	.	.
JUL	29.000	24.000	25.000	23.000	24.000	23.000
AUG	24.000	24.000	24.000	23.000	24.000	23.000
SEP	29.000	24.000	33.000	32.000	26.000	26.000
OCT	24.000	24.000	25.000	24.000	24.000	23.000
NOV	33.000	22.000	23.000	23.000	22.000	21.000
DEC	33.000	22.000	23.000	22.000	22.000	22.000
BORON (UG/L)				DET'N LIMIT = 0.200 GUIDELINE = 5000. (A1)		
JAN	35.000	21.000	19.000 <T	18.000 <T	19.000 <T	19.000 <T
FEB	29.000	22.000	30.000	27.000	23.000	21.000
MAR	24.000	42.000	73.000	54.000	57.000	73.000
APR	28.000	74.000	220.000	80.000	43.000	40.000
MAY	170.000	73.000	34.000	130.000	24.000	44.000
JUN	21.000	ISM	23.000	23.000	.	.
JUL	35.000	26.000	44.000	23.000	28.000	24.000
AUG	71.000	27.000	25.000	31.000	22.000	23.000
SEP	50.000	36.000	45.000	46.000	45.000	46.000
OCT	23.000	29.000	28.000	25.000	22.000	21.000
NOV	20.000 <T	21.000	23.000	20.000 <T	21.000	21.000
DEC	20.000 <T	21.000	25.000	23.000	24.000	22.000
BERYLLIUM (UG/L)				DET'N LIMIT = 0.010 GUIDELINE = N/A		
JAN	.020 <T	.030 <T	BDL	.040 <T	.020 <T	BDL
FEB	.090 <T	BDL	.030 <T	BDL	BDL	.040 <T
MAR	BDL	.140 <T	.070 <T	.060 <T	.110 <T	.110 <T
APR	.140 <T	.120 <T	.260 <T	.150 <T	BDL	BDL
MAY	.350 <T	.080 <T	.090 <T	.120 <T	.100 <T	.030 <T
JUN	.070 <T	ISM	.030 <T	.030 <T	.	.
JUL	.170 <T	.020 <T	.060 <T	BDL	BDL	BDL
AUG	.120 <T	.060 <T	BDL	.090 <T	.020 <T	.050 <T
SEP	.130 <T	.120 <T	.080 <T	BDL	.110 <T	BDL
OCT	.020 <T	.030 <T	.020 <T	BDL	BDL	BDL
NOV	.090 <T	BDL	BDL	BDL	BDL	BDL
DEC	.020 <T	BDL	BDL	BDL	BDL	BDL
CADMIUM (UG/L)				DET'N LIMIT = 0.050 GUIDELINE = 5.000 (A1)		
JAN	BDL	BDL	BDL	BDL	.070 <T	BDL
FEB	.070 <T	BDL	BDL	.070 <T	BDL	BDL
MAR	.150 <T	.120 <T	BDL	BDL	BDL	BDL
APR	.240 <T	.120 <T	.150 <T	.130 <T	.140 <T	.160 <T
MAY	BDL	BDL	BDL	BDL	.100 <T	BDL
JUN	BDL	ISM	.100 <T	.090 <T	.	.
JUL	.070 <T	BDL	.200 <T	.100 <T	.130 <T	.140 <T
AUG	BDL	BDL	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
SEP	BDL	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL
COBALT (UG/L)			DET'N LIMIT = 0.020 GUIDELINE = N/A			
JAN	.610 <T	.070 <T	.110 <T	.120 <T	.130 <T	.120 <T
FEB	.790 <T	.040 <T	.050 <T	.030 <T	.040 <T	.060 <T
MAR	.070 <T	.170 <T	.140 <T	.190 <T	.180 <T	.160 <T
APR	1.000 <T	.090 <T	.090 <T	.060 <T	.070 <T	.060 <T
MAY	.530 <T	.270 <T	.120 <T	.110 <T	.090 <T	.090 <T
JUN	.050 <T	ISM	BDL	BDL	.	.
JUL	.810 <T	.060 <T	.100 <T	.110 <T	.120 <T	.060 <T
AUG	.200 <T	.070 <T	.120 <T	.110 <T	.110 <T	.090 <T
SEP	.730 <T	.090 <T	.050 <T	.080 <T	.110 <T	.110 <T
OCT	.310 <T	.090 <T	.070 <T	.090 <T	.060 <T	.090 <T
NOV	1.200	.060 <T	.030 <T	.030 <T	.030 <T	.030 <T
DEC	1.300	.100 <T	.150 <T	.050 <T	.050 <T	.040 <T
CHROMIUM (UG/L)			DET'N LIMIT = 0.100 GUIDELINE = 50. (A1)			
JAN	5.200	.560 <T	.530 <T	BDL	BDL	.150 <T
FEB	1.800	BDL	1.200	.670 <T	.150 <T	BDL
MAR	.210 <T	2.800	6.700	4.300	5.300	6.900
APR	.850 <T	2.200	8.800	2.600	.950 <T	.730 <T
MAY	9.000	2.800	.770 <T	4.500	.370 <T	1.100
JUN	.240 <T	ISM	.450 <T	.140 <T	.	.
JUL	4.000	1.300	5.800	.660 <T	1.900	.950 <T
AUG	7.200	1.000 <T	.730 <T	1.300	.350 <T	.390 <T
SEP	5.500	2.500	4.300	4.500	4.200	4.200
OCT	.930 <T	2.700	1.900	1.300	BDL	BDL
NOV	.870 <T	BDL	BDL	BDL	BDL	BDL
DEC	.850 <T	.110 <T	1.200	.430 <T	.690 <T	.160 <T
COPPER (UG/L)			DET'N LIMIT = .100 GUIDELINE = 1000 (A3)			
JAN	2.300	.980 <T	12.000	2.000	34.000	3.900
FEB	3.500	1.200	5.100	3.600	33.000	3.200
MAR	6.400	1.900	8.800	3.900	25.000	3.200
APR	4.700	1.400	5.600	2.800	28.000	4.000
MAY	2.300	1.400	5.100	3.900	39.000	4.500
JUN	1.600	ISM	4.500	4.700	.	.
JUL	3.900	1.300	10.000	4.200	24.000	3.400
AUG	1.300	.650 <T	9.200	2.700	18.000	2.700
SEP	3.600	1.100	5.100	2.900	16.000	3.000
OCT	1.500	.840 <T	4.300	2.100	25.000	3.800
NOV	4.600	.980 <T	15.000	1.800	17.000	2.800
DEC	4.400	.910 <T	3.800	1.600	20.000	2.500

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
IRON (UG/L)				DET'N LIMIT = 4.000 GUIDELINE = 300. (A3)		
JAN	770.000	13.000 <T	BDL	BDL	22.000 <T	15.000 <T
FEB	1100.000	16.000 <T	11.000 <T	16.000 <T	17.000 <T	26.000 <T
MAR	BDL	13.000 <T	7.600 <T	5.100 <T	19.000 <T	14.000 <T
APR	1100.000	13.000 <T	6.300 <T	BDL	26.000 <T	7.800 <T
MAY	290.000	BDL	BDL	BDL	BDL	BDL
JUN	100.000	ISM	BDL	6.100 <T	.	.
JUL	850.000	19.000 <T	BDL	6.200 <T	15.000 <T	16.000 <T
AUG	180.000	6.700 <T	16.000 <T	BDL	6.300 <T	9.300 <T
SEP	770.000	BDL	BDL	BDL	8.000 <T	8.300 <T
OCT	370.000	BDL	BDL	BDL	7.400 <T	5.100 <T
NOV	1500.000	98.000	BDL	BDL	11.000 <T	13.000 <T
DEC	1600.000	BDL	BDL	BDL	12.000 <T	16.000 <T
MERCURY (UG/L)				DET'N LIMIT = 0.010 GUIDELINE = 1.000 (A1)		
JAN	.030 <T	.030 <T	.	.040 <T	.	.030 <T
FEB	.030 <T	.030 <T	.	.020 <T	.	.030 <T
MAR	.020 <T	.030 <T	.	.030 <T	.	.030 <T
APR	.020 <T	.040 <T	.	.030 <T	.	.030 <T
MAY	.050 <T	.040 <T	.	.030 <T	.	.030 <T
JUN	.040 <T	.050 <T	.	.040 <T	.	.
JUL	.040 <T	.040 <T	.	.040 <T	.	.040 <T
AUG	.040 <T	.070	.	.060	.	.070
SEP	.040 <T	.030 <T	.	.030 <T	.	.030 <T
OCT	.030 <T	.060	.	.030 <T	.	.030 <T
NOV	.040 <T	.090	.	.070	.	.040 <T
DEC	.040 <T	.030 <T	.	.040 <T	.	.040 <T
MANGANESE (UG/L)				DET'N LIMIT = .050 GUIDELINE = 50.0 (A3)		
JAN	90.000	1.200	.800	.760	1.400	1.500
FEB	150.000	1.100	.990	.990	.850	1.700
MAR	BDL	.610	.550	.470 <T	.970	1.100
APR	140.000	1.500	1.100	1.100	2.900	1.500
MAY	40.000	.760	.790	.880	1.100	2.100
JUN	9.800	ISM	.920	.900	.	.
JUL	130.000	.900	.470 <T	.460 <T	2.200	2.300
AUG	16.000	.600	.890	.680	2.100	1.900
SEP	110.000	.490 <T	.370 <T	.320 <T	2.600	2.200
OCT	24.000	.440 <T	.410 <T	.440 <T	1.900	1.900
NOV	180.000	1.500	.960	1.000	1.300	1.800
DEC	200.000	1.200	.790	.810	1.100	2.000
MOLYBDENUM (UG/L)				DET'N LIMIT = 0.020 GUIDELINE = N/A		
JAN	.520	.980	.980	.960	1.000	1.100
FEB	.540	1.200	1.200	1.200	1.100	1.100
MAR	1.700	1.200	1.300	1.300	1.200	1.300
APR	.400 <T	1.200	1.100	1.100	1.200	1.200

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
MAY	1.100	1.600	1.300	1.300	1.300	1.200
JUN	1.600	ISM	1.600	1.500	.	.
JUL	.800	1.300	1.400	1.400	1.400	1.300
AUG	1.200	1.300	1.300	1.300	1.200	1.300
SEP	.840	1.300	1.600	1.800	1.400	1.600
OCT	1.100	1.300	1.300	1.300	1.200	1.200
NOV	.380 <T	1.100	1.200	1.100	1.100	1.100
DEC	.360 <T	1.100	1.100	1.200	1.200	1.200
NICKEL (UG/L)				DET'N LIMIT = 0.100 GUIDELINE = 50. (F3)		
JAN	1.700 <T	.240 <T	.970 <T	.840 <T	.930 <T	.740 <T
FEB	1.500 <T	BDL	.360 <T	.540 <T	.760 <T	.760 <T
MAR	.270 <T	1.500 <T	2.100	1.400 <T	1.900 <T	1.300 <T
APR	1.800 <T	.400 <T	.530 <T	.380 <T	.740 <T	.860 <T
MAY	2.100	1.500 <T	1.400 <T	1.600 <T	1.900 <T	1.300 <T
JUN	.780 <T	ISM	.680 <T	.310 <T	.	.
JUL	1.600 <T	.420 <T	.780 <T	.530 <T	.540 <T	.770 <T
AUG	2.100	1.600 <T	2.600	1.700 <T	2.100	1.400 <T
SEP	1.800 <T	.350 <T	.810 <T	.890 <T	3.300	.680 <T
OCT	1.200 <T	.240 <T	1.400 <T	.280 <T	.750 <T	BDL
NOV	3.600	.960 <T	2.300	1.300 <T	2.100	1.400 <T
DEC	1.900 <T	.820 <T	.770 <T	.960 <T	1.100 <T	1.300 <T
LEAD (UG/L)				DET'N LIMIT = 0.050 GUIDELINE = 50. (A1)		
JAN	1.800	.070 <T	4.000	.230	4.200	.350
FEB	2.300	.060 <T	1.000	.210	2.200	.250
MAR	.090 <T	.190 <T	.790	.460	2.000	.430
APR	2.800	.340	1.500	.510	5.800	.520
MAY	.890	BDL	.670	.420	3.000	.680
JUN	.250	ISM	1.000	.510	.	.
JUL	2.300	.180 <T	4.400	.940	3.100	.910
AUG	.460	BDL	1.800	.650	2.600	.850
SEP	2.200	.100 <T	1.200	.830	3.200	1.000
OCT	.510	.070 <T	1.100	.380	3.300	.600
NOV	2.800	.030 <T	1.300	.240	2.100	.320
DEC	3.100	BDL	.720	.150 <T	2.000	.260
ANTIMONY (UG/L)				DET'N LIMIT = .050 GUIDELINE = 146. (D4)		
JAN	.360	.390	.450	.540	.590	.500
FEB	.300	.460	.420	.450	.550	.440
MAR	.990	.730	.730	.780	.740	.660
APR	.360	.550	.580	.670	.640	.500
MAY	.840	.740	.810	.720	.870	.810
JUN	.950	ISM	.980	.940	.	.
JUL	.540	.620	.730	.770	.720	.630
AUG	.840	.620	.640	.710	.750	.740
SEP	.600	.730	.610	.610	.650	.620

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
OCT	.430	.440	.550	.550	.650	.690
NOV	.270	.320	.380	.320	.440	.300
DEC	.250	.440	.510	.440	.560	.520
SELENIUM (UG/L)				DET'N LIMIT = 0.200	GUIDELINE = 10. (A1)	
JAN	.420 <T	.240 <T	1.700 <T	.630 <T	.630 <T	1.000 <T
FEB	1.400 <T	.600 <T	2.000 <T	2.200 <T	2.100 <T	1.800 <T
MAR	6.800 <T	4.500 <T	4.700 <T	2.600 <T	5.400 <T	4.500 <T
APR	1.400 <T	3.600 <T	3.200 <T	2.400 <T	4.500 <T	3.600 <T
MAY	1.100 <T	2.600 <T	5.400 <T	3.600 <T	4.000 <T	5.300 <T
JUN	.750 <T	ISM	2.500 <T	3.000 <T	.	.
JUL	BDL	2.200 <T	3.300 <T	2.700 <T	4.300 <T	2.900 <T
AUG	1.300 <T	2.900 <T	3.500 <T	2.800 <T	4.200 <T	5.700
SEP	5.300	6.100	2.200 <T	2.300 <T	1.500 <T	3.200 <T
OCT	BDL	BDL	BDL	BDL	1.100 <T	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL
STRONTIUM (UG/L)				DET'N LIMIT = .050	GUIDELINE = N/A	
JAN	140.000	130.000	130.000	130.000	130.000	130.000
FEB	170.000	150.000	150.000	150.000	150.000	150.000
MAR	79.000	150.000	150.000	150.000	150.000	150.000
APR	200.000	170.000	170.000	170.000	170.000	170.000
MAY	170.000	160.000	160.000	160.000	160.000	160.000
JUN	160.000	ISM	150.000	150.000	.	.
JUL	170.000	150.000	160.000	150.000	150.000	150.000
AUG	150.000	150.000	150.000	150.000	140.000	140.000
SEP	170.000	150.000	180.000	180.000	170.000	160.000
OCT	150.000	150.000	150.000	150.000	150.000	150.000
NOV	180.000	150.000	150.000	150.000	140.000	140.000
DEC	180.000	140.000	150.000	150.000	150.000	140.000
TITANIUM (UG/L)				DET'N LIMIT = .050	GUIDELINE = N/A	
JAN	7.600	2.100	2.100	1.600 <T	1.500 <T	1.500 <T
FEB	9.300	2.300	2.300	2.000 <T	2.000 <T	2.200
MAR	1.700 <T	3.600	3.200	2.500	2.700	3.000
APR	16.000	6.700	6.800	6.800	7.000	6.800
MAY	8.600	3.800	5.000	5.000	4.900	5.100
JUN	6.900	ISM	5.200	5.200	.	.
JUL	13.000	4.300	5.000	4.700	4.900	4.400
AUG	10.000	4.300	4.200	4.400	4.100	4.100
SEP	14.000	5.300	4.700	4.800	4.400	4.500
OCT	8.300	3.000	3.100	2.500	3.300	3.500
NOV	11.000	1.900 <T	2.700	1.900 <T	1.700 <T	1.900 <T
DEC	11.000	2.600	2.700	2.500	2.400	2.300
THALLIUM (UG/L)				DET'N LIMIT = .010	GUIDELINE = 13. (D4)	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JAN	BDL	BDL	BDL	BDL	BDL	BDL
FEB	.050 <T	BDL	.020 <T	.020 <T	BDL	.020 <T
MAR	BDL	BDL	BDL	BDL	BDL	BDL
APR	.290	.150 <T	.190 <T	.190 <T	.190 <T	.200 <T
MAY	.040 <T	BDL	.050 <T	.050 <T	.040 <T	BDL
JUN	.080 <T	ISM	.070 <T	.020 <T	.	.
JUL	.020 <T	.030 <T	BDL	BDL	BDL	BDL
AUG	.030 <T	.020 <T	.060 <T	.060 <T	.020 <T	.020 <T
SEP	.130 <T	.040 <T	.060 <T	BDL	BDL	BDL
OCT	.030 <T	BDL	BDL	BDL	BDL	BDL
NOV	.030 <T	BDL	BDL	BDL	BDL	BDL
DEC	.020 <T	BDL	BDL	BDL	BDL	BDL
URANIUM (UG/L)				DET'N LIMIT = .020	GUIDELINE = 100.(B1)	
JAN	.300	.180 <T	.190 <T	.220	.240	.220
FEB	.440	.300	.260	.210	.260	.280
MAR	.440	.430	.420	.380	.390	.420
APR	.510	.430	.420	.440	.330	.300
MAY	.470	.500	.380	.380	.390	.460
JUN	.520	ISM	.440	.430	.	.
JUL	.600	.470	.690	.560	.450	.440
AUG	.510	.360	.430	.370	.440	.440
SEP	.500	.340	.470	.420	.590	.650
OCT	.340	.300	.310	.230	.240	.280
NOV	.390	.230	.240	.220	.300	.230
DEC	.390	.170 <T	.170 <T	.210	.190 <T	.180 <T
VANADIUM (UG/L)				DET'N LIMIT = .050	GUIDELINE = N/A	
JAN	1.200	.400 <T	.390 <T	.430 <T	.500 <T	.370 <T
FEB	1.600	.310 <T	.300 <T	.250 <T	.340 <T	.330 <T
MAR	.160 <T	.290 <T	.290 <T	.310 <T	.310 <T	.280 <T
APR	1.600	.360 <T	.410 <T	.390 <T	.380 <T	.250 <T
MAY	.720	.440 <T	.380 <T	.390 <T	.540	.390 <T
JUN	.330 <T	ISM	.430 <T	.450 <T	.	.
JUL	1.300	.480 <T	.470 <T	.450 <T	.490 <T	.430 <T
AUG	.540	.480 <T	.480 <T	.470 <T	.500 <T	.520
SEP	1.300	.680	.770	.790	.620	.560
OCT	.670	.580	.540	.580	.510	.500 <T
NOV	2.100	.570	.530	.570	.570	.510
DEC	2.100	.500 <T	.520	.540	.400 <T	.410 <T
ZINC (UG/L)				DET'N LIMIT = .001	GUIDELINE = 5000. (A3)	
JAN	4.900	.570 <T	6.300	1.400	4.900	1.100
FEB	6.200	.900 <T	3.000	1.400	7.000	1.100
MAR	.470 <T	.880 <T	3.100	1.400	6.200	1.300
APR	7.200	1.200	4.500	2.200	4.200	2.000
MAY	3.800	1.400	2.500	1.700	6.400	2.700

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JUN	2.300	ISM	3.600	2.200	.	.
JUL	6.400	1.900	7.200	2.700	4.300	2.100
AUG	1.300	.740 <T	7.200	1.600	4.700	1.000 <T
SEP	6.300	1.700	3.400	2.600	6.100	2.600
OCT	2.100	.690 <T	4.700	1.600	13.000	1.400
NOV	9.200	1.300	6.000	2.100	4.100	1.500
DEC	8.700	.880 <T	3.300	1.300	8.300	1.200

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
PESTICIDES & PCB						
ALPHA BHC (NG/L)			DET'N LIMIT = 1.000		GUIDELINE = 700 (G)	
JAN	2.000 <T	1.000 <T	.	1.000 <T	.	1.000 <T
FEB	3.000 <T	2.000 <T	.	BDL	.	BDL
MAR	2.000 <T	2.000 <T	.	1.000 <T	.	2.000 <T
APR	IPE	2.000 <T	.	1.000 <T	.	BDL
MAY	1.000 <T	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	BDL	.	.
JUL	3.000 <T	BDL	.	BDL	.	2.000 <T
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	BDL	.	BDL	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	1.000 <T	BDL	.	BDL	.	BDL
LINDANE (NG/L)			DET'N LIMIT = 1.000		GUIDELINE = 4000 (A1)	
JAN	BDL	BDL	.	BDL	.	BDL
FEB	2.000 <T	1.000 <T	.	BDL	.	BDL
MAR	BDL	BDL	.	BDL	.	BDL
APR	IPE	BDL	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	BDL	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	BDL	.	BDL	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL
ATRAZINE (NG/L)			DET'N LIMIT = 50.00		GUIDELINE = 60000 (B3)	
JAN	BDL	BDL	.	BDL	.	BDL
FEB	BDL	BDL	.	BDL	.	BDL
MAR	BDL	BDL	.	BDL	.	BDL
APR	BDL	BDL	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	130.000 <T
JUN	BDL	BDL	.	BDL	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	90.000 <T	50.000 <T	.	.	.	.
SEP	BDL	BDL	.	.	.	.
OCT	BDL	BDL	.	.	.	.
NOV	BDL	BDL	.	.	.	.
DEC	BDL	BDL	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
PHENOLICS (UG/L PHENOLICS)			DET'N LIMIT = 0.2		GUIDELINE = 2.00 (A3)	
JAN	.800	1.000	.	.	.	.
FEB	1.800	1.600	.	.	.	.
MAR	1.000	1.200	.	.	.	.
APR	1.200	1.000	.	.	.	.
MAY	4.400	9.200	.	.	.	.
JUN	1.600	1.200	.	.	.	.
JUL	4.000	1.000	.	.	.	.
AUG	1.000 <T	.400 <T	.	.	.	.
SEP	BDL	.600 <T	.	.	.	.
OCT	1.600	1.000	.	.	.	.
NOV	1.000	BDL	.	.	.	.
DEC	1.000	.600 <T	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
VOLATILES						
TOLUENE (UG/L)				DET'N LIMIT = .050	GUIDELINE = 24.0 (B4)	
JAN	BDL	BDL	.	.050 <T	.	.050 <T
FEB	BDL	BDL	.	BDL	.	BDL
MAR	BDL	BDL	.	.100 <T	.	BDL
APR	BDL	BDL	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	BDL	.	.
JUL	BDL	.050 <T	.	.050 <T	.	.050 <T
AUG	BDL	.050 <T	.	.050 <T	.	BDL
SEP	BDL	BDL	.	BDL	.	BDL
OCT	BDL	BDL	.	IBT	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	IU	.	IU
ETHYLBENZENE (UG/L)				DET'N LIMIT = .050	GUIDELINE = 2.4 (B4)	
JAN	BDL	BDL	.	.050 <T	.	BDL
FEB	BDL	.050 <T	.	.050 <T	.	BDL
MAR	BDL	BDL	.	.050 <T	.	BDL
APR	BDL	BDL	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	BDL	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	BDL	.	BDL	.	BDL
OCT	BDL	BDL	.	IBT	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	IU	.	IU
STYRENE (UG/L)				DET'N LIMIT = .050	GUIDELINE = 46.5 (D2)	
JAN	.300 <T	BDL	.	BDL	.	BDL
FEB	BDL	.100 <T	.	BDL	.	BDL
MAR	.250 <T	BDL	.	BDL	.	BDL
APR	BDL	BDL	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	.100 <T	BDL	.	BDL	.	.
JUL	.050 <T	BDL	.	BDL	.	.100 <T
AUG	.100 <T	.050 <T	.	.100 <T	.	.100 <T
SEP	BDL	BDL	.	BDL	.	BDL
OCT	BDL	BDL	.	IBT	.	BDL
NOV	BDL	BDL	.	.100 <T	.	BDL
DEC	BDL	BDL	.	IU	.	IU
CHLOROFORM (UG/L)				DET'N LIMIT = .100	GUIDELINE = 350 (A1+)	
JAN	BDL	15.000	.	13.900	.	14.900
FEB	BDL	13.200	.	12.900	.	14.200
MAR	BDL	14.100	.	17.900	.	19.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
APR	BDL	18.300	.	13.000	.	16.400
MAY	BDL	19.600	.	21.200	.	19.800
JUN	.300 <T	17.400	.	21.500	.	.
JUL	BDL	19.700	.	18.000	.	19.300
AUG	.200 <T	65.600	.	22.700	.	21.000
SEP	.100 <T	22.700	.	18.900	.	20.000
OCT	BDL	21.200	.	IBT	.	19.800
NOV	BDL	14.900	.	15.800	.	17.400
DEC	BDL	15.700	.	IU	.	IU
111, TRICHLOROETHANE (UG/L)				DET'N LIMIT = .020	GUIDELINE = 200 (D1)	
JAN	BDL	BDL	.	BDL	.	BDL
FEB	BDL	BDL	.	BDL	.	BDL
MAR	BDL	BDL	.	BDL	.	.020 <T
APR	BDL	BDL	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	BDL	.	.
JUL	BDL	BDL	.	.020 <T	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	.040 <T	BDL	.	BDL	.	BDL
OCT	BDL	BDL	.	IBT	.	BDL
NOV	.060 <T	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	IU	.	IU
DICHLOROBROMOMETHANE (UG/L)				DET'N LIMIT = .050	GUIDELINE = 350 (A1+)	
JAN	BDL	9.250	.	8.800	.	10.050
FEB	BDL	8.850	.	9.200	.	9.900
MAR	BDL	10.700	.	12.800	.	13.750
APR	BDL	12.050	.	9.000 APS	.	11.100
MAY	BDL	11.150	.	12.400	.	11.500
JUN	.100 <T	10.050	.	12.400	.	.
JUL	.100 <T	12.000	.	11.100	.	11.900
AUG	.150 <T	12.800	.	12.450	.	13.000
SEP	.150 <T	12.200	.	10.850	.	11.800
OCT	BDL	12.750	.	IBT	.	12.800
NOV	BDL	9.500	.	10.350	.	10.150
DEC	BDL	10.050	.	IU	.	IU
CHLORODIBROMOMETHANE (UG/L)				DET'N LIMIT = .100	GUIDELINE = 350 (A1+)	
JAN	BDL	4.800	.	4.500	.	4.900
FEB	BDL	4.300	.	4.300	.	4.900
MAR	BDL	5.000	.	5.100	.	6.200
APR	BDL	5.500	.	3.900	.	5.200
MAY	BDL	6.200	.	5.800	.	5.100
JUN	BDL	4.800	.	5.400	.	.
JUL	.100 <T	5.100	.	5.000	.	5.500
AUG	.100 <T	1.600	.	5.200	.	6.600

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
SEP	.100 <T	5.700	.	5.500	.	6.200
OCT	BDL	5.700	.	IBT	.	6.200
NOV	BDL	5.400	.	5.000	.	6.200
DEC	BDL	4.300	.	IU	.	IU
T-CHLOROETHYLENE (UG/L)				DET'N LIMIT = .050	GUIDELINE = 10.0 (C2)	
JAN	BDL	BDL	.	BDL	.	BDL
FEB	BDL	BDL	.	BDL	.	BDL
MAR	BDL	BDL	.	BDL	.	BDL
APR	BDL	BDL	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	.050 <T	.	.050 <T	.	.
JUL	BDL	BDL	.	.100 <T	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	.050 <T	.	.300 <T	.	.050 <T
OCT	BDL	BDL	.	IBT	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	IU	.	IU
BROMOFORM (UG/L)				DET'N LIMIT = .200	GUIDELINE = 350 (A1+)	
JAN	BDL	.400 <T	.	.400 <T	.	.400 <T
FEB	BDL	.400 <T	.	.400 <T	.	.400 <T
MAR	BDL	.600 <T	.	.600 <T	.	.600 <T
APR	BDL	BDL	.	BDL	.	.400 <T
MAY	BDL	.800 <T	.	.400 <T	.	.400 <T
JUN	BDL	.600 <T	.	.600 <T	.	.
JUL	BDL	.600 <T	.	.600 <T	.	.600 <T
AUG	BDL	BDL	.	.600 <T	.	.800 <T
SEP	BDL	.600 <T	.	.600 <T	.	.600 <T
OCT	BDL	.600 <T	.	IBT	.	.800 <T
NOV	BDL	.600 <T	.	.600 <T	.	.800 <T
DEC	BDL	.400 <T	.	IU	.	IU
TOTL TRIHALOMETHANES (UG/L)				DET'N LIMIT = .500	GUIDELINE = 350 (A1)	
JAN	BDL	29.450	.	27.600	.	30.250
FEB	BDL	26.750	.	26.800	.	29.400
MAR	BDL	30.400	.	36.400	.	39.550
APR	BDL	32.850	.	25.900	.	33.100
MAY	BDL	37.750	.	39.800	.	36.800
JUN	BDL	32.850	.	39.900	.	.
JUL	BDL	37.400	.	34.700	.	37.300
AUG	BDL	80.000	.	40.950	.	41.400
SEP	BDL	41.200	.	35.850	.	38.600
OCT	BDL	40.250	.	IBT	.	39.600
NOV	BDL	30.400	.	31.750	.	34.550
DEC	BDL	30.400	.	IU	.	IU

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM ST THOMAS (ELGIN WSS) 1989

WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
RAW	TREATED	SITE 1		SITE 2	
		STANDING	FREE FLOW	STANDING	FREE FLOW

TRACE LEVELS OF TOLUENE ARE LABORATORY ARTIFACTS DERIVED FROM THE ANALYTICAL METHODOLOGY.

TRACE LEVELS OF STYRENE ARE CONSIDERED TO BE LABORATORY ARTIFACTS RESULTING FROM THE LABORATORY SHIPPING CONTAINERS.

Table 6

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
BACTERIOLOGICAL			
FECAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	0 (A1)
STANDARD PLATE COUNT MEMBRANE FILTRATION	CT/ML	0	500/ML(A1)
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100mL(A1)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A
CHLOROAROMATICS			
HEXACHLOROBUTADIENE	NG/L	1.000	450. (D4)
1,2,3-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,3,4-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,3,5-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,4-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,4,5-TETRACHLOROBENZENE	NG/L	1.000	38000 (D4)
1,3,5-TRICHLOROBENZENE	NG/L	5.000	10000 (D4)
HEXACHLOROBENZENE	NG/L	1.0	10. (C1)
HEXACHLOROETHANE	NG/L	1.000	1900. (D4)
OCTACHLOROSTYRENE	NG/L	1.000	N/A
PENTACHLOROBENZENE	NG/L	1.000	74000 (D4)
2,3,6-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,4,5-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,6,A-TRICHLOROTOLUENE	NG/L	5.000	N/A
CHLOROPHENOLS			
2,3,4-TRICHLOROPHENOL	NG/L	50.	N/A
2,3,4,5-TETRACHLOROPHENOL	NG/L	50.	N/A
2,3,5,6-TETRACHLOROPHENOL	NG/L	50.	N/A
2,4,5-TRICHLOROPHENOL	NG/L	50.	2600000 (D4)
2,4,6-TRICHLOROPHENOL	NG/L	50.	2000. (B4)
PENTACHLOROPHENOL	NG/L	50.	30000. (B4)
CHEMISTRY (FLD)			
FIELD COMBINED CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD FREE CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD TOTAL CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD PH	DMSNLESS	N/A	6.5-8.5(A4)
FIELD TEMPERATURE	^{o}C	N/A	<15 ^{o}C(A1)
FIELD TURBIDITY	FTU	N/A	1.0 (A1)
CHEMISTRY (LAB)			
ALKALINITY	MG/L	.200	30-500(A4)
CALCIUM	MG/L	.100	100. (F2)
CYANIDE	MG/L	.001	.20(A1)
CHLORIDE	MG/L	.200	250. (A3)
COLOUR	TCU	.5	5.0 (A3)
CONDUCTIVITY	UMHO/CM	1.	400. (F2)
FLUORIDE	MG/L	.01	2.4 (A1)
HARDNESS	MG/L	.50	80-100(A4)
MAGNESIUM	MG/L	.05	30. (F2)

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
NITRITE	MG/L	.001	1.0 (A1)
TOTAL NITRATES	MG/L	.02	10. (A1)
NITROGEN TOTAL KJELDAHL	MG/L	.02	N/A
PH	DMSNLESS	N/A	6.5-8.5(A4)
PHOSPHORUS FIL REACT	MG/L	.0005	N/A
PHOSPHORUS TOTAL	MG/L	.002	.40(F2)
SULPHATE	MG/L	.200	500. (A3)
TOTAL SOLIDS	MG/L	1.	500. (A3)
TURBIDITY	FTU	.02	1.0 (A1)
METALS			
ALUMINUM	UG/L	.050	100. (A4)
ANTIMONY	UG/L	.050	10. (F3)
ARSENIC	UG/L	.050	50. (A1)
BARIUM	UG/L	.020	1000. (A1)
BORON	UG/L	.200	5000. (A1)
BERYLLIUM	UG/L	.010	0.20 (H)
CADMIUM	UG/L	.050	5.0 (A1)
COBALT	UG/L	.020	1000. (H)
CHROMIUM	UG/L	.100	50. (A1)
COPPER	UG/L	.100	1000. (A3)
IRON	UG/L	5.0	300. (A3)
MERCURY	UG/L	.01	1.0 (A1)
MANGANESE	UG/L	.050	50. (A3)
MOLYBDENUM	UG/L	.020	500. (H)
NICKEL	UG/L	.100	50. (F3)
LEAD	UG/L	.020	50. (A1)
SELENIUM	UG/L	.200	10. (A1)
SILVER	UG/L	.020	50. (A1)
STRONTIUM	UG/L	.100	2000. (H)
THALLIUM	UG/L	.010	13. (D4)
TITANIUM	UG/L	.100	N/A
URANIUM	UG/L	.020	20. (A2)
VANADIUM	UG/L	.020	100. (H)
ZINC	UG/L	.020	5000. (A3)
PHENOLICS			
PHENOLICS (UNFILTERED REACTIVE)	UG/L	.2	2.0 (A3)
PESTICIDES & PCB			
ALDRIN	NG/L	1.0	700. (A1)
AMETRINE	NG/L	50.	300000. (D3)
ATRAZINE	NG/L	50.	60000. (B3)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	700. (G)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300. (G)
GAMMA HEXACHLOROCYCLOHEXANE(LINDANE)	NG/L	1.0	4000. (A1)
ALPHA CHLORDANE	NG/L	2.0	7000. (A1)
GAMMA CHLORDANE	NG/L	2.0	7000. (A1)
BLADEX	NG/L	100.	10000. (B3)
DIELDRIN	NG/L	2.0	700. (A1)
METHOXYCHLOR	NG/L	5.0	900000. (B1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000. (D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	4.0	74000. (D4)
ENDRIN	NG/L	4.0	200. (A1)
ENDOSULFAN SULPHATE(THIODAN SULPHATE)	NG/L	4.0	N/A

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
HEPTACHLOR EPOXIDE	NG/L	1.0	3000.	(A1)
HEPTACHLOR	NG/L	1.0	3000.	(A1)
METOLACHLOR	NG/L	500.	50000.	(B3)
MIREX	NG/L	5.0	N/A	
OXYCHLORDANE	NG/L	2.0	N/A	
O,P-DDT	NG/L	5.0	30000.	(A1)
PCB	NG/L	20.0	3000.	(A2)
O,P-DDD	NG/L	5.0	N/A	
PPDDE	NG/L	1.0	30000.	(A1)
PPDDT	NG/L	5.0	30000.	(A1)
ATRATONE	NG/L	50.	N/A	
ALACHLOR	NG/L	500.	35000.	(D2)
PROMETONE	NG/L	50.	52500.	(D3)
PROPAZINE	NG/L	50.	16000.	(D2)
PROMETRYNE	NG/L	50.	1000.	(B3)
SENCOR (METRIBUZIN)	NG/L	100.	80000.	(B2)
SIMAZINE	NG/L	50.	10000.	(B3)
POLYAROMATIC HYDROCARBONS				
PHENANTHRENE	NG/L	10.0	N/A	
ANTHRACENE	NG/L	1.0	N/A	
FLUORANTHENE	NG/L	20.0	42000.	(D4)
PYRENE	NG/L	20.0	N/A	
BENZO(A)ANTHRACENE	NG/L	20.0	N/A	
CHRYSENE	NG/L	50.0	N/A	
DIMETHYL BENZO(A)ANTHRACENE	NG/L	5.0	N/A	
BENZO(E)PYRENE	NG/L	50.0	N/A	
BENZO(B)FLUORANTHENE	NG/L	10.0	N/A	
PERYLENE	NG/L	10.0	N/A	
BENZO(K)FLUORANTHENE	NG/L	1.0	N/A	
BENZO(A)PYRENE	NG/L	5.0	10.	(B1)
BENZO(G,H,I)PERYLENE	NG/L	20.0	N/A	
DIBENZO(A,H)ANTHRACENE	NG/L	10.0	N/A	
INDENO(1,2,3-C,D)PYRENE	NG/L	20.0	N/A	
BENZO(B)CHRYSENE	NG/L	2.0	N/A	
CORONENE	NG/L	10.0	N/A	
SPECIFIC PESTICIDES				
TOXAPHENE	NG/L	N/A	5000.	(A1)
2,4,5-TRICHLOROBUTYRIC ACID (2,4,5-T)	NG/L	50.	200000.	(B4)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000.	(A1)
2,4-DICHLORORPHENOXYBUTYRIC ACID	NG/L	200.	18000.	(B3)
2,4-D PROPIONIC ACID	NG/L	100.	N/A	
DICAMBA	NG/L	100.	120000.	(B1)
PICLORAM	NG/L	100.	190000.	(B3)
SILVEX (2,4,5-TP)	NG/L	50.	10000.	(A1)
DIAZINON	NG/L	20.	20000.	(B1)
DICHLOROVOS	NG/L	20.	N/A	
DURSBAN	NG/L	20.	N/A	
ETHION	NG/L	20.	35000.	(G)
GUTHION(AZINPHOSMETHYL)	NG/L	N/A	20000.	(B1)
MALATHION	NG/L	20.	190000.	(B1)
MEVINPHOS	NG/L	20.	N/A	
METHYL PARATHION	NG/L	50.	7000.	(A1)
METHYLTRITHION	NG/L	20.	N/A	

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
PARATHION	NG/L	20.	50000.	(B1)
PHORATE (THIMET)	NG/L	20.	2000.	(B3)
RELDAN	NG/L	20.	N/A	
RONNEL	NG/L	20.	N/A	
AMINOCARB	NG/L	N/A	N/A	
BENONYL	NG/L	N/A	N/A	
BUX (METALKAMATE)	NG/L	2000.	N/A	
CARBOFURAN	NG/L	2000.	90000.	(B1)
CICP (CHLORPROPHAM)	NG/L	2000.	350000.	(G)
DIALLATE	NG/L	2000.	30000.	(H)
EPTAM	NG/L	2000.	N/A	
IPC	NG/L	2000.	N/A	
PROPOXUR (BAYGON)	NG/L	2000.	90000.	(G)
SEVIN (CARBARYL)	NG/L	200.	90000.	(B1)
SUTAN (BUTYLATE)	NG/L	2000.	245000.	(D3)
VOLATILES				
BENZENE	UG/L	.050	5.0	(B1)
TOLUENE	UG/L	.050	24.0	(B4)
ETHYLBENZENE	UG/L	.050	2.4	(B4)
PARA-XYLENE	UG/L	.100	300.	(B4)
META-XYLENE	UG/L	.100	300.	(B4)
ORTHO-XYLENE	UG/L	.050	300.	(B4)
1,1-DICHLOROETHYLENE	UG/L	.100	7.0	(D1)
ETHLYENE DIBROMIDE	UG/L	.05	.05	G)
METHYLENE CHLORIDE	UG/L	.500	50.	(B1)
TRANS-1,2-DICHLOROETHYLENE	UG/L	.100	70.	(D5)
1,1-DICHLOROETHANE	UG/L	.100	N/A	
CHLOROFORM	UG/L	.100	350.	(A1+)
1,1,1-TRICHLOROETHANE	UG/L	.020	200.	(D1)
1,2-DICHLOROETHANE	UG/L	.050	5.0	(D1)
CARBON TETRACHLORIDE	UG/L	.200	5.0	(B1)
1,2-DICHLOROPROPANE	UG/L	.050	6.0	(D5)
TRICHLOROETHYLENE	UG/L	.100	50.	(B1)
DICHLOROBROMOMETHANE	UG/L	.050	350.	(A1+)
1,1,2-TRICHLOROETHANE	UG/L	.050	.60	(D4)
CHLORODIBROMOMETHANE	UG/L	.100	350.	(A1+)
TETRACHLOROETHYLENE	UG/L	.050	10.0	(C2)
BROMOFORM	UG/L	.200	350.	(A1+)
1,1,2,2-TETRACHLOROETHANE	UG/L	.050	0.17	(D4)
CHLOROBENZENE	UG/L	.100	60.	(D5)
1,4-DICHLOROBENZENE	UG/L	.100	1.0	(B4)
1,3-DICHLOROBENZENE	UG/L	.100	130.	(G)
1,2-DICHLOROBENZENE	UG/L	.050	3.0	(B4)
TRIFLUOROCHLOROTOLUENE	UG/L	.100	N/A	
TOTAL TRIHALOMETHANES	UG/L	.500	350.	(A1)
STYRENE	UG/L	.05	140.	(D5)